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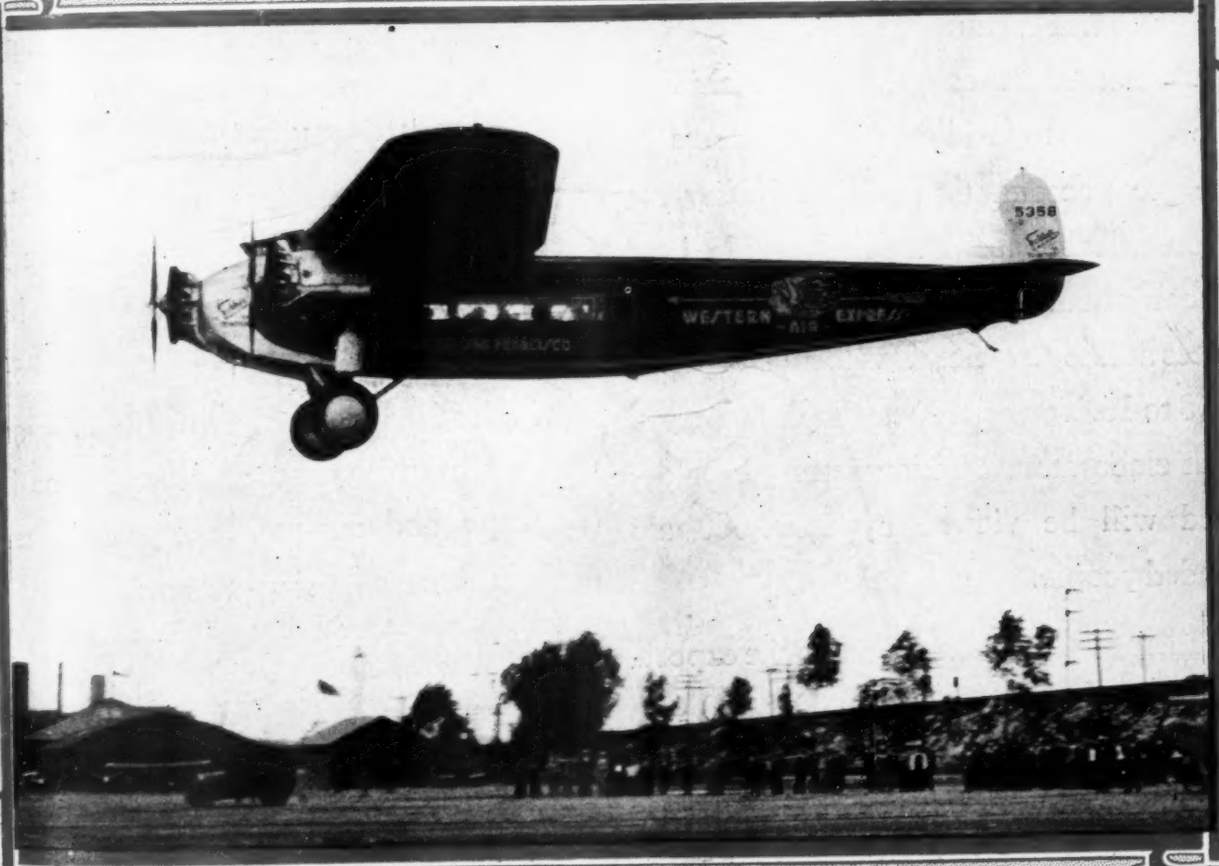
# AVIATION

*The Oldest American Aeronautical Magazine*

JUNE 4, 1928 | Issued Weekly | PRICE 20 CENTS




A W.A.E. Fokker F-10 landing at the Kansas City, Mo., airport.

VOLUME XXIV

NUMBER 23

## *Special Features*

The Warner "Scarab"
Naval Reserve Aviation
The Aero Craft "Aero Coupe"

AVIATION PUBLISHING CORPORATION
250 WEST 57 STREET, NEW YORK

Publication Office, Highland, N. Y. Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office, at Highland, N. Y. under Act of March 3, 1879.

# The World's Aeronautical Buying Power

## *will center at your booth September 8 to 16*

AIRCRAFT and aircraft accessories manufacturers will have their first opportunity to exhibit their products in one great aeronautic pavilion during the aeronautical exposition which will be held in conjunction with the National Air Races at Los Angeles, California, September 8 to 16. Your products displayed in the most elaborate exhibition setting ever devised will be viewed by 1,500,000 air minded people.

Built of light steel and stucco the exposition building will measure 400 x 500 feet and will contain 200,000 feet of exhibition space in one huge room. The building will be of Spanish and Moorish architectural motif and will be the most beautiful exhibition structure ever used for aeronautical display.

Three landing fields totaling 2,200 feet wide and one mile long will be located alongside of the exposition building. Airplane manufacturers may fly their planes to the doors of the building, thus saving the cost of dismantling, freighting and reassembling both ways. The landing fields are available also for demonstration purposes. This is the first time this feature has been offered to exhibitors.

The leaders of the aircraft industry are making exhibition space reservations by telegraph and air mail. If you haven't already done so get your application in today. This exposition has been sanctioned by the United States Aeronautical Chamber of Commerce, and will be one of the biggest aircraft shows of 1928.

You can market your entire 1929 output over the counter at this gigantic pageant of aeronautic progress. California Air Race Association, Telegraph or air mail Cliff Henderson, Managing Director National Air Races and Aeronautical Exposition, Ambassador Hotel, Los Angeles, California.

# Fairchild FIRST Again . . .

Acme

*The* FIRST *to reach the disabled Bremen—the Fairchild Cabin Monoplane*

THE first 'plane to reach the Bremen's crew at Greenly Island was a Fairchild Cabin Monoplane. No sooner was the distress of the disabled Bremen known, than C. A. (Duke) Schiller and Dr. Louis Couisiner of the Transcontinental Airways, Ltd. of Canada, volunteered to carry aid to the three intrepid airmen . . . Baron Gunther von Huenefeld, Major Fitzmaurice and Captain Hermann Koehl.

Through almost a thousand miles of rain, snow, sleet and fog, the Fairchild rescue 'plane plied its course from Murray Bay to Greenly Island. No more hazardous or unfavorable a flight could be contemplated . . . into the very jaws of disaster, many observers predicted. The Fairchild Cabin Monoplane, nevertheless, went through, and brought Major Fitzmaurice back to Murray Bay for spare parts and special fuel for the Bremen.

Of the eight 'planes which subsequently flew to Greenly Island, seven were Fairchild Cabin Monoplanes. The respect with which experienced pilots consider Fairchild 'planes is typified by Duke Schiller's remark, when a Fairchild was suggested as the 'plane for his epic flight—"With that 'baby', we can go to the pole."

As a result of the experience gained in building more cabin monoplanes than any other manufacturer—all Fairchild 'planes are ruggedly constructed for dependable service over land, water, or ice . . . through sleet, rain and snow as well as in the hot still air of the torrid zone. Fairchild Airplane Manufacturing Corporation, 270 West 38th Street, New York City.

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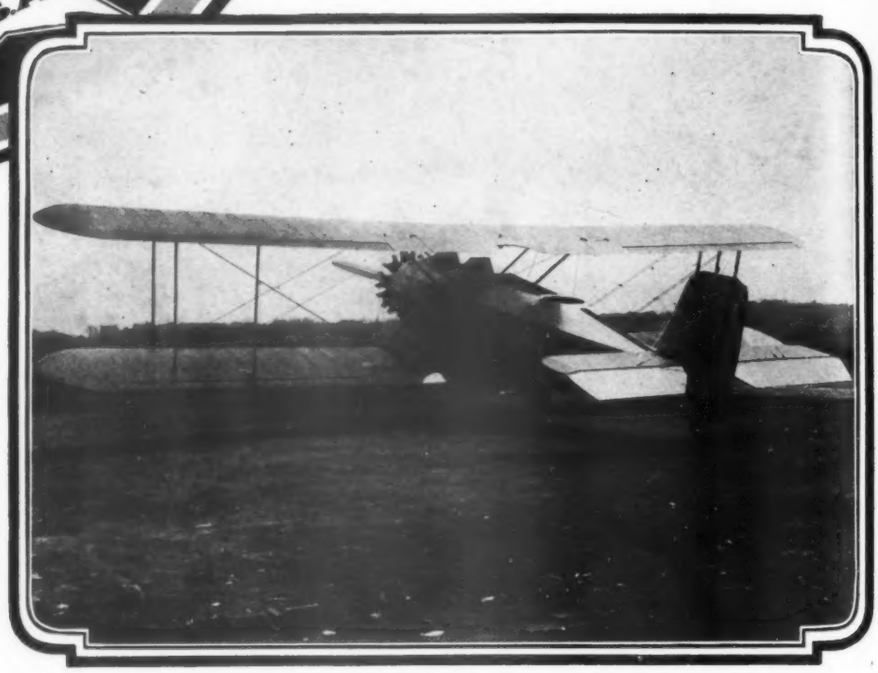
The Martin 74—air-cooled, all-metal, three-purpose plane.



# ACCOMPLISHMENT

One year ago we announced to the aeronautic world an intensive and far-reaching program of research and development. The first achievement of this program is the Martin 74 (above) for which the U. S. Navy Department has placed orders totalling 103 planes—which sets new standards in virtually every detail of design, material and construction.

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performance transport
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The Leoning Amphibian
4-passenger cabin plane
(Wasp)

The Lockheed Air Mail
and passenger plane
(Wasp)

# Versatility of the Commercial Wasp

The 400 H. P. "Wasp" is demonstrating a most remarkable versatility of application in commercial use. The "Wasp" is now installed in more than twenty various types of commercial ships, including land planes, sea planes, and amphibians, varying from the smaller individually owned four and five passenger cabin planes to giant tri-motor passenger and mail ships. In the service of one transport company alone commercial "Wasp" engines have been flown almost one and one-half million miles, carrying mail and passengers.

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**THE**
**PRATT & WHITNEY AIRCRAFT CO.**
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# SPERRY BEACON SAVES FIVE PLANES AT BATTLE CREEK

April 24, 1928.

Sperry Gyroscope Co.,
Manhattan Bridge Plaza,
Brooklyn, N. Y.

Gentlemen:

The Sperry Beacon which we purchased from your company last year has now been in operation for exactly thirteen months. We thought you might be interested in knowing how we value the service it has rendered.

During the course of the past year five planes have arrived at night, in which the pilots have accredited the saving of their lives to the picking up of the light of the Sperry Beacon at the Battle Creek Airport. In each instance the pilots informed us that they were absolutely lost. These pilots stated that they realized they were to be afforded a port of safety, inasmuch as Battle Creek is the only city in Michigan operating a beacon light.

These were outstanding occurrences, to say nothing of the frequent expressions of appreciation by local pilots. We have also had numerous comments by citizens and tourists regarding the advertising value of the beacon, through seeing the light from the ground as far distant as thirty miles.

These facts are presented, substantiating the opinion expressed by our Airport Committee that a dependable beacon should be provided for an airport if complete lighting equipment cannot be purchased.

The Sperry Beacon has been operated with great satisfaction these thirteen months, without any care whatsoever other than greasing and the changing of lamps.

Yours very truly,

BATTLE CREEK CHAMBER OF COMMERCE

R. Haberman

Secretary.

RH:LW

MR. HABERMAN writes in the accompanying unsolicited letter that a dependable rotating beacon should be the first item for consideration in the equipping of an Airport.

In choosing a beacon, quality should be considered paramount to price.

Be safe and sure with a Sperry Beacon.

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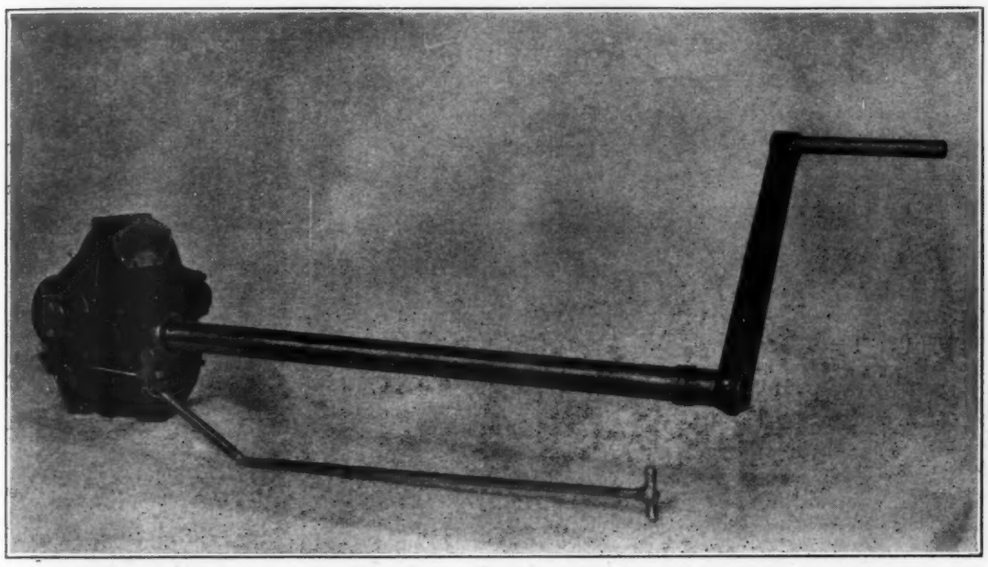

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*You men who plan, build, use or pay for machines of any kind, remember this: It costs more to replace a poor bearing than to buy the best one that SKF ever produced. AND SKF ANTI-FRICTION BEARINGS ARE THE HIGHEST PRICED IN THE WORLD.*

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**Ball Bearings** SKF Puts the Right Bearing in the Right Place **Roller Bearings**

# A NEW TRAINING PLANE

# The Curtiss Fledgling

THE FLEDGLING was constructed as the winner of a Navy design competition, in which fourteen leading aircraft manufacturers participated.

It is specifically designed for primary and advanced training, either as a land plane or as a seaplane, and is equipped for fixed and flexible gunnery instruction, radio spotting, and bombing.

In design and performance, the Fledgling is eminently representative of 1928 standards for training planes.

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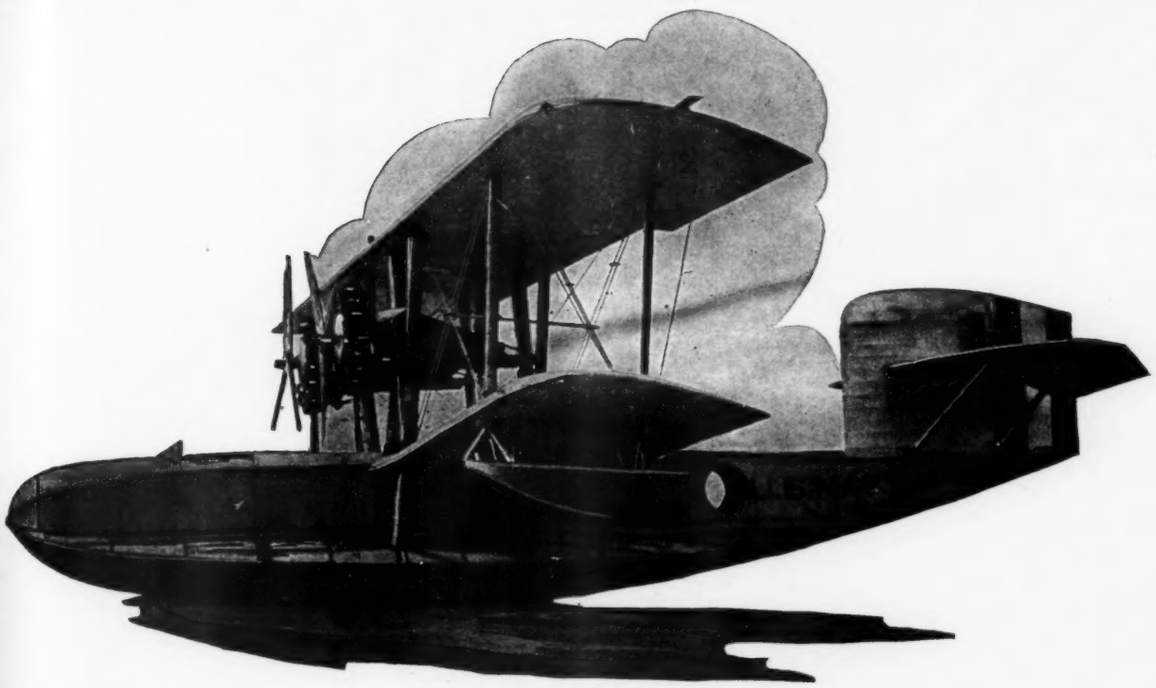

# PN-12 Breaks Endurance Record

## —*with the help of*

## AERO MOTOR LUBRICATING OIL

Aero Motor Lubricating Oil was used in both motors of the PN-12 on its flight that exceeded by more than 8 hours the former seaplane sustained flight record. It took off from the Philadelphia Navy Yard May 3rd, at 2:50 p. m. (Standard Time), landing at 2:51 a. m. May 5th, or 36 hours, 1 minute, 13 4-5 seconds. Distance covered equals Lindbergh's flight . . . full load 19,000 pounds . . . crew of four.

*The Port Motor*, which carried most of the load, used only 16 gallons during the entire flight, or .007 lbs. per BHPHR.

*The Starboard Motor*, despite the fact that it was throwing oil, used 23 gallons, or .00975 lbs. per BHPHR. The total Aero Motor Lubricating Oil consumed by both motors was 39 gallons, or an average of .008 lbs. per BHPHR.

The oil that made this record was our regular No. 870 Aero Motor Lubricating Oil.

Aero Motor Lubricating Oils, in all required grades, are available in many sections of the country. Write us for the name of the nearest dealer.

### Notice

In order to conform with the general practice of using the as our principal trademark, we are substituting same in place of the initials A-M-L-O, our brand which stands for Aero Motor Lubricating Oil. In the future all packages heretofore shipped and sold as A-M-L-O will be labeled as illustrated by the trademark to the right.

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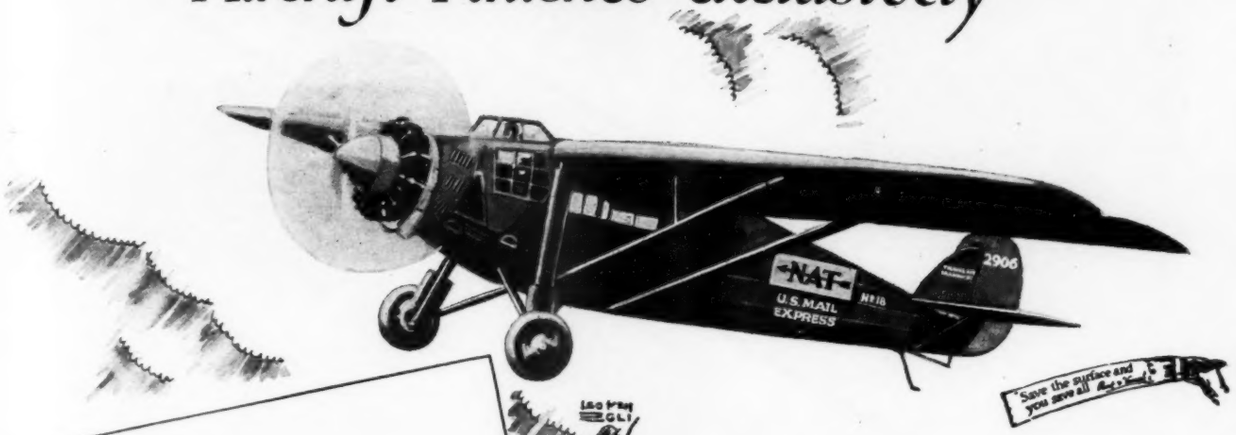


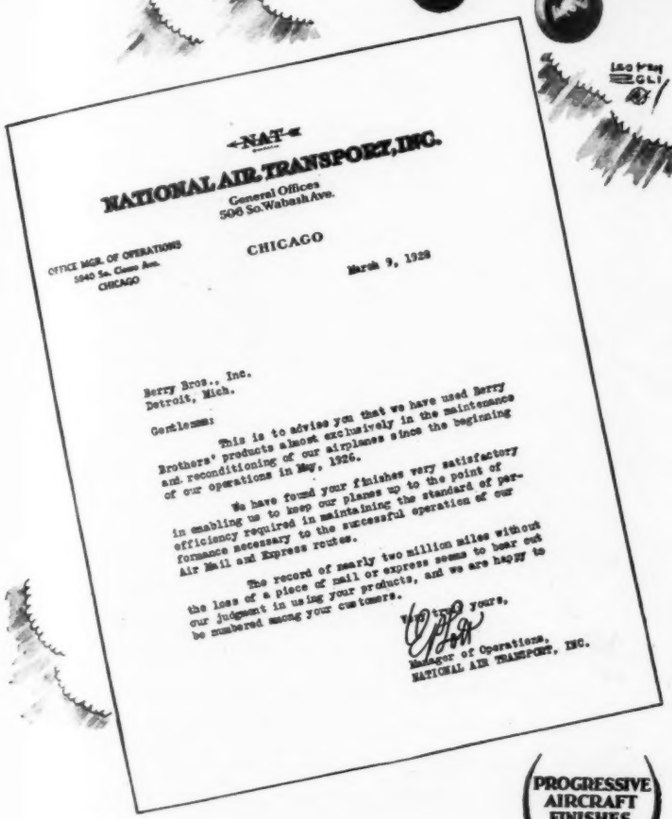

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March 9, 1928

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The record of nearly two million miles without the loss of a piece of mail or express seems to bear out our judgment in using your products, and we are happy to be numbered among your customers.

Yours truly,

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Voicing experience encompassed in 2,000,000 miles of successful operation, the letter at the left leaves little untold. Every member of the industry knows that there is hardly a tougher test for pilot or plane than day-in-and-day-out operation on routes like this.

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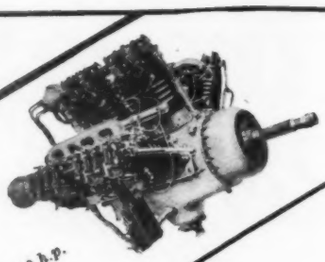
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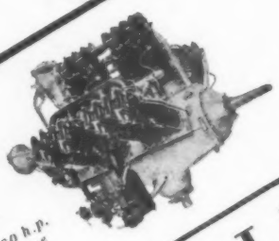
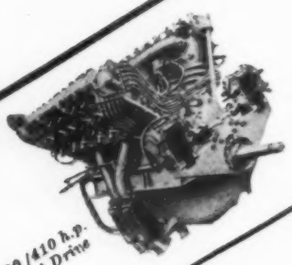

450/480 h.p. Direct Drive


400/410 h.p. Direct Drive

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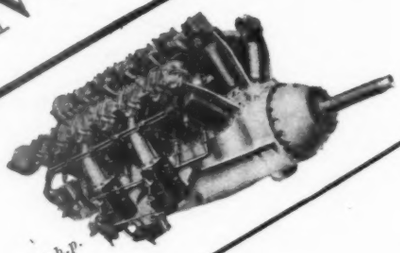
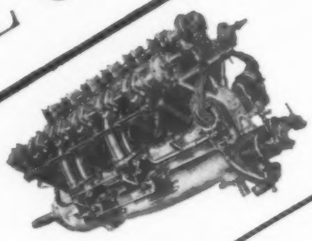

650/750 h.p. Geared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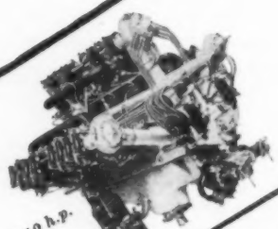
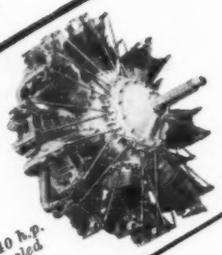
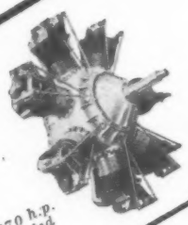
Aircraft Engines


480/510 h.p. High Compression


470/540 h.p. Air Cooled


230/270 h.p. Air Cooled

100/110 h.p. Air Cooled

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# when the sun is blazin'

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# "How can I get into Aviation?"

## *Read this Answer from*

# A World Famous Trans-Atlantic Pilot

AVIATION is waiting for no one. Too many millions of capital are already invested—the demand for air service of *every* kind is increasing too fast. Aviation demands men who KNOW. Men who can DO. Men who can step into the real jobs and command the real salaries. Plane production today is ten times what it was a year ago. And a year from now it will be twenty times what it is today! Landing fields, municipal airports, plane and equipment factories, air mail and passenger lines, service and sales organizations—all are leaping ahead in the fastest, most amazing development that any industry has ever known. In such racing, feverish activity, **where** is there any room for a man who has nothing to offer? An empty pocqetbook is no drawback—but Aviation has no place, no patience, no time for empty hands or empty heads! Aviation is taking off for the greatest non-stop flight in history—and the men who will go along and climb to the top are the men with a foundation of FACTS under them.

### Walter Hinton

The man who is ready to help YOU get into Aviation is the man who has **four times** been one of the world's outstanding flyers. Walter Hinton was pilot of the famous NC-4, first plane to fly the Atlantic; he piloted the first plane from North to South America; he was first to fly to the headwaters of the Amazon; he was the hero of the runaway Navy balloon that was swept halfway to the North Pole. But in addition to being an explorer, pioneer and Aviator, Hinton also has the rare ability to teach **others** the knowledge he has gained. During the War he was a crack flying instructor for the Navy. Today—with a course that experts agree is the most complete and practical ever produced—Hinton is training keen-sighted men for the Big-Pay jobs in Aviation.

### You Don't Have to Fly; 40 Different Jobs on the Ground PAY BIG too!

To succeed in Aviation—make BIG MONEY—you need not necessarily be a pilot. There must be many thousands of pilots, certainly. But for every plane that flies, there's an immediate need for trained men in more than **forty** different important jobs on the ground. Construction, motor and instrument experts—airport managers, service foremen, salesmen—all make **real** money. Some of them even bigger pay than pilots earn. But every last one of them must have the FACTS. Today's problem—YOUR problem—is to LEARN Aviation **quick.** And right there is where Walter Hinton is achieving the biggest success of his career.

### *Choose Your Job!*

**(Here's a Few of the 40)**

**Designer and Engineer, Pilot, Engine and Plane Mechanic, Rigger, Wire Worker, Electrician, Welder, Instrument Maker, Wood and Metal Worker, Draughtsman, Plane and Motor Inspector, Airport Operator, Radio Expert, Assemblyman, Aerial Surveyor and Photographer, Aerial Transport Manager, Salesman.**

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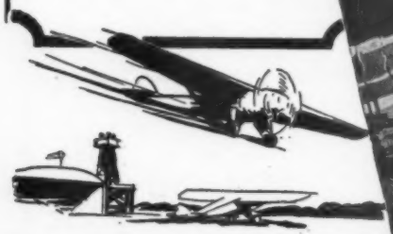

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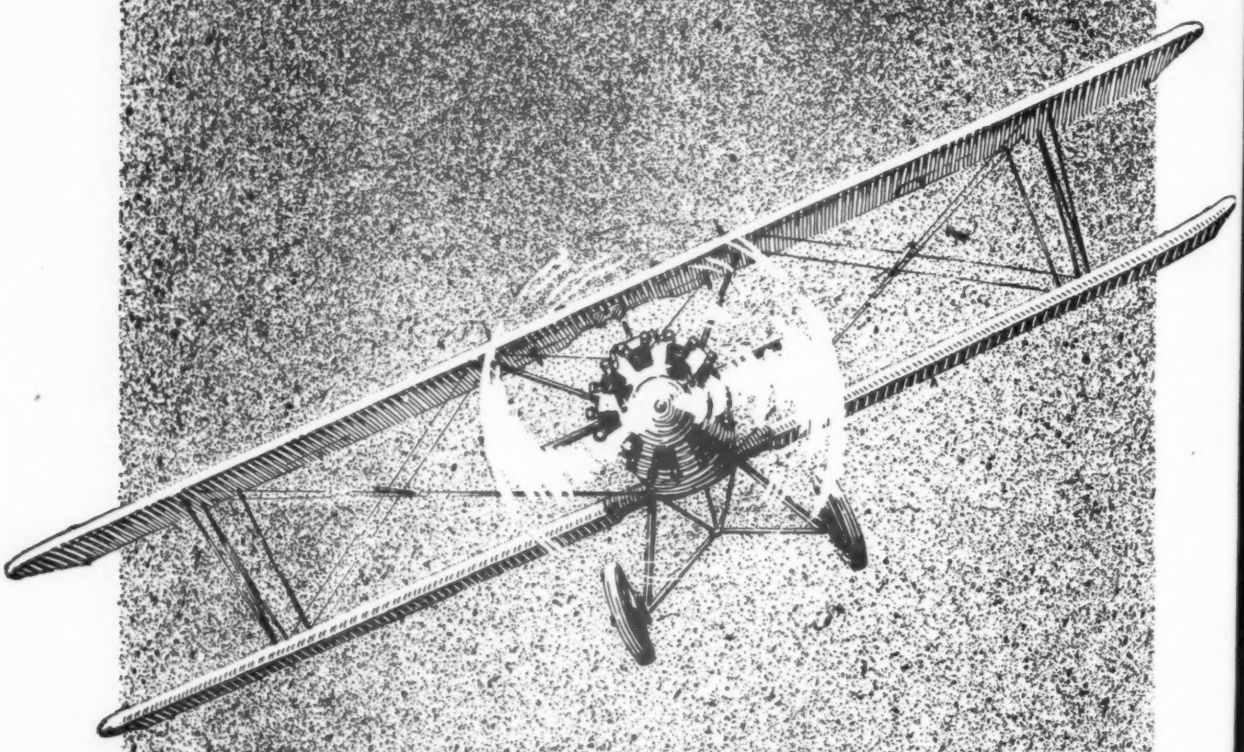

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Buffalo, N.Y.

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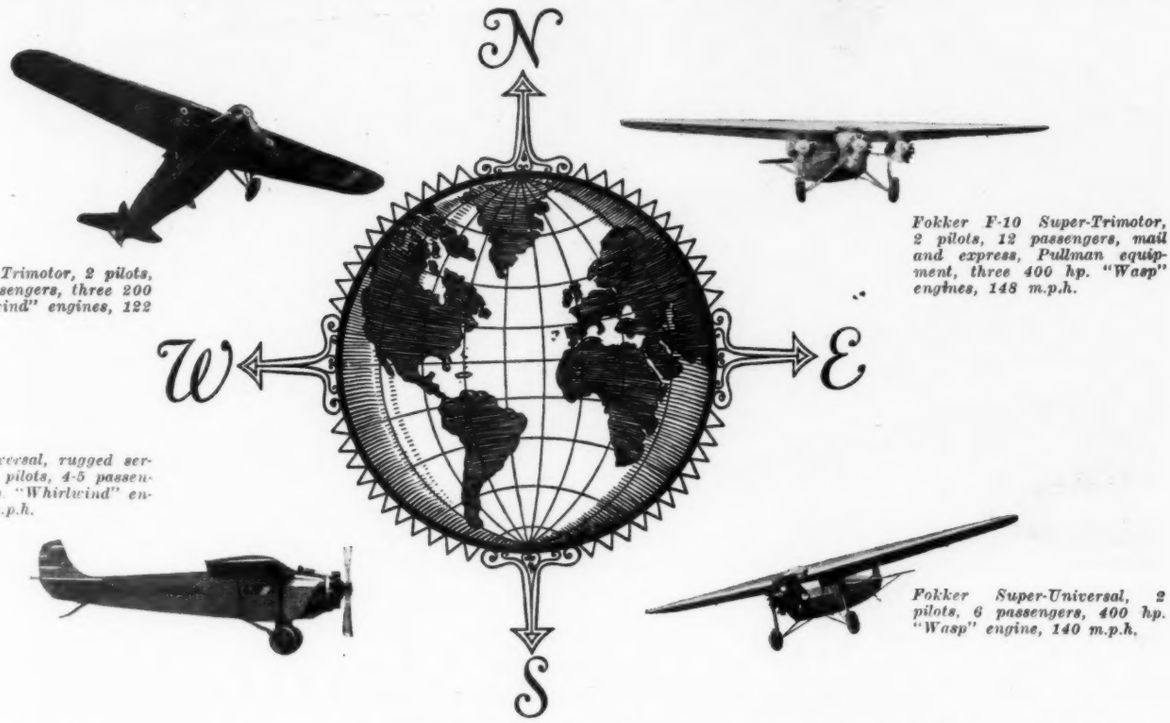


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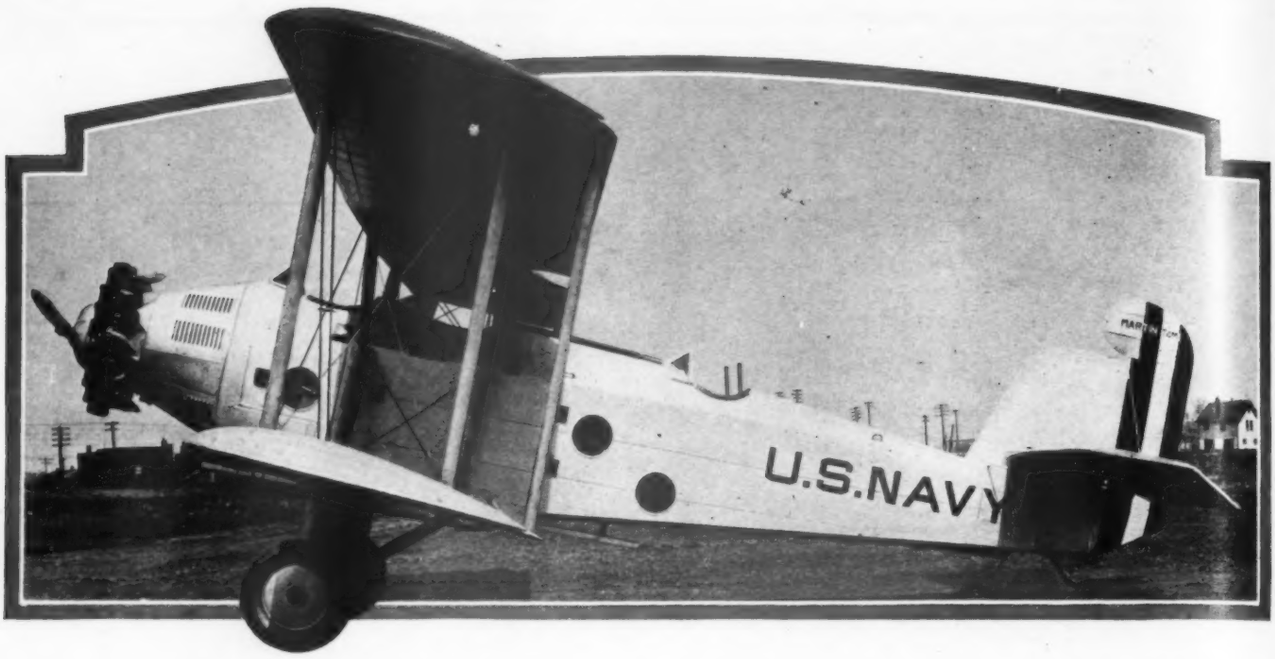


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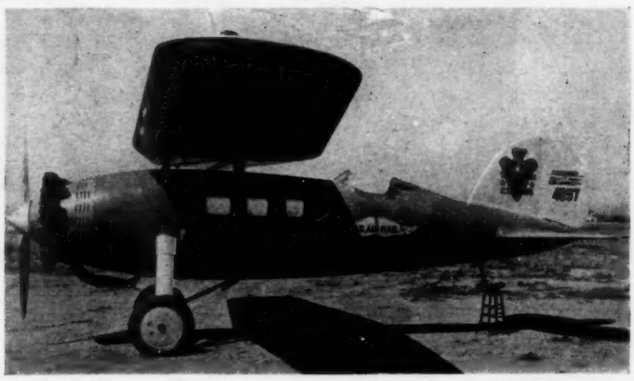

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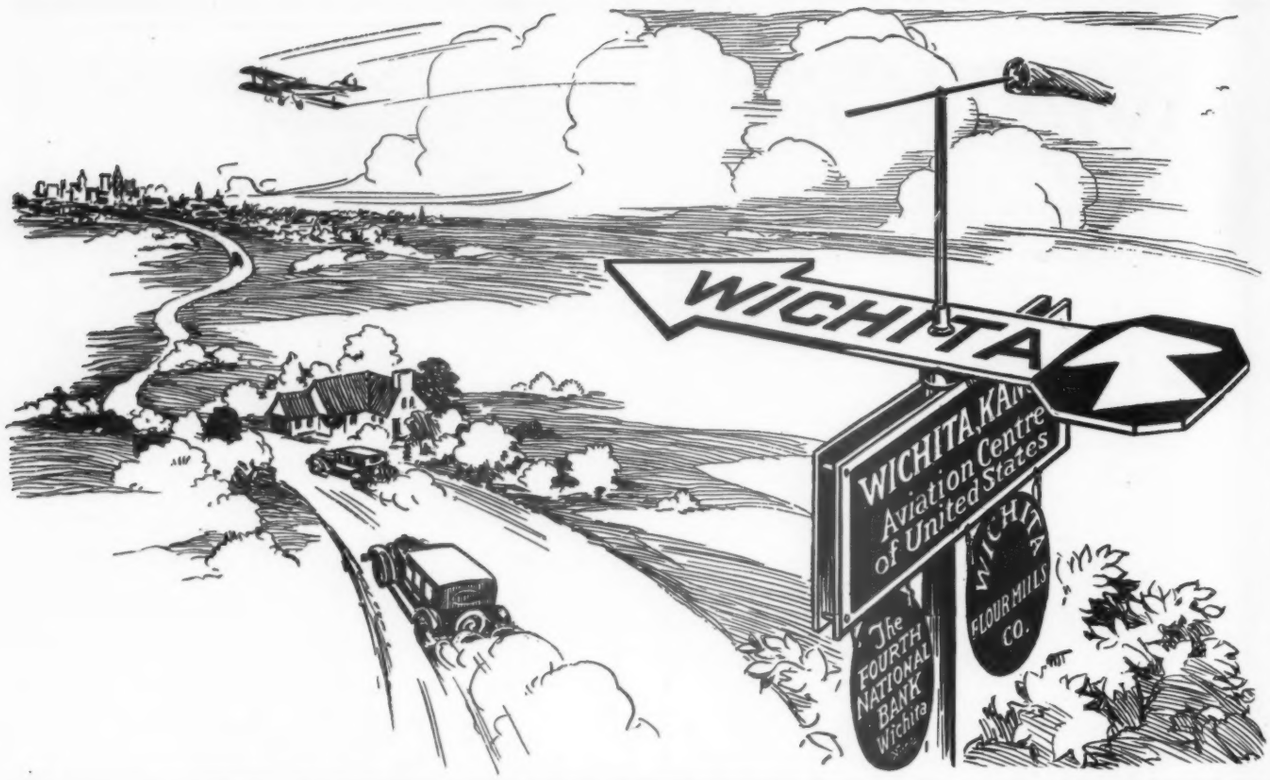


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## Speed Ranges

THE NORMAL speed range of present day aircraft is roughly two to one; that is, the high speed is about twice the landing speed. By increasing the landing speed by ten miles per hour one is able to increase the high speed by twenty miles per hour and it is only natural that designers have gradually increased their landing speed in order to gain high speed. There is, however, a limit to this increase even if planes are flown from excellent fields and are handled by expert pilots. When it comes to planes which are to be handled by inexperienced fliers and from poor fields it is almost universally admitted that we have already reached landing speeds which are too high.

The simplest expedient for increasing the speed range is to increase the reserve power. Certain racing planes have a speed range of more than three to one but with present day engines such reserves are hardly practical and the fundamental problem presents itself of either decreasing the resistance of a given wing section or of actually changing the shape of the section by mechanical means. The later method seems to indicate the most promising results but the mechanical difficulties involved are extremely difficult to overcome. That no satisfactory mechanical means of changing wing section has been generally adopted does not mean that it never will. The competition for the Guggenheim prize should bring out many new ideas and it is certainly hoped that some method will be found that will check the present tendency towards high speeds in landing.

## Civilian Engineering

THE NATIONAL Advisory Committee for Aeronautics now has one of the best equipped laboratories for aerodynamic research in the world. In addition it has pilots who are accustomed to flight testing, and also it has developed a series of instruments for recording flights that are unique.

Heretofore its efforts have been directed toward pure research and the solving of the problems which are met in the design of military craft. With the growth of civilian aviation the N.A.C.A., which is subsidized by the government for the purpose of serving the "people", should turn its attention more to the specific problems which affect commercial aviation. One of the first things which might be gone into is the question of comfort for passengers. Instruments could be developed to measure the sounds in the cabins of closed planes. Various experiments with mufflers, geared propellers and padded walls could be tried. And manufacturers could send their products to Langley Field and have actual tests made of the volume of sound in their planes.

Then there is the matter of ventilation in the passengers' cabin. This subject has never been scientifically studied as far as aircraft are concerned. Maximum accelerations or the strains which can be placed on airplanes due to very bumpy air such as is found in thunderstorms is also a matter of great importance of which very little is known. Ice formation, which is primarily a civilian problem, is another subject which needs considerable study. The N.A.C.A. is already studying this problem.

The above are but a few of the many problems which could be suggested as needing study from the civilian angle. At the manufacturers' meeting, held recently at Langley Field, the N.A.C.A. showed that it was anxious to tackle some of these problems, and it is now up to the builders of civilian aircraft to formulate their needs. There is no doubt that the N.A.C.A. has the equipment and personnel to tackle jobs which would be impossible for the individual manufacturer to undertake, and there is also little doubt that the manufacturer who takes advantage of those facilities will have a valuable adjunct to his own engineering staff.

## A Good Policy

A NOTEWORTHY sales policy was established by the Stinson Aircraft Corp., when that organization turned down an order sent in by the German aviatrix, Miss Thea Rasche, for a Stinson-Detroiter to be used by her on a West-East trans-Atlantic attempt some time during the coming summer.

The Stinson company is to be highly commended for its inauguration of such a policy, for, regardless of the fact that one of its planes has successfully accomplished a West-East Atlantic flight, it has been more or less proven that the safety factor of a single engined plane over the North Atlantic stretch is very small indeed. Why then should the Stinson company lend itself to a venture which, even if successful, would add very little to its name, and less to the advancement of commercial aviation? The Stinson company has taken the initiative in the conducting of an exceedingly worth-while campaign—to keep single engined planes off the Atlantic and Pacific. It is to be hoped that other manufacturers of possible trans-oceanic planes powered with but a single engine will follow the lead of the Stinson company and adopt a similar policy.

# Naval Reserve Aviation

## Since its Inception in 1923, 175 Men Have Been Trained and Four Reserve Aviation Units Have Been Established

By JAMES P. WINES

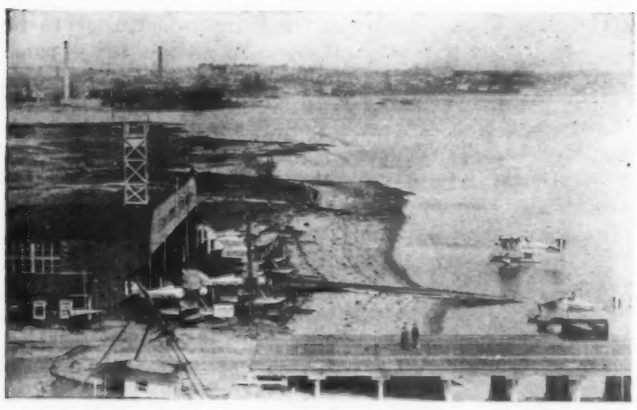
DECLARATION OF the existence of a national emergency soon will be all that is required to increase the strength of the United States Navy by ten aircraft squadrons, which will be ready for action practically overnight. This addition to the country's war-time fighting strength will be made possible as the result of a program now being carried out by the Navy Department for building up an active, well-trained air reserve.

Under the present plan, the reserve aircraft squadrons are not to be skeleton organizations. The officer complement is rapidly being filled; likewise, the enlisted personnel is being recruited and trained. When the program is completed, the Navy will have 10 aircraft squadrons that may be mobilized "in case of national emergency" within 24 hr., officials of the department say.

Since 1923 the Navy has been training aviators for this purpose. In these five years, 175 men, almost all of them college graduates, have completed a special course and have been commissioned ensigns in the United States Naval Reserve with designations as naval reserve aviators. Seventy more are expected to have qualified by the end of the 1928 summer training period.

Upon completion of the course and as soon as these men receive their commissions, they are assigned to squadrons for further training. Officials of the department are frank in admitting that the plan has not yet progressed far enough to allow the training of the personnel of each squadron as a whole; however, rapid strides are now being made in this direction and it will not be long before this is accomplished.

The plan of establishing an active reserve aviation force was conceived in the Bureau of Aeronautics in the autumn of 1922, an officer holding an important position in the Bureau of Navigation told a representative of AVIATION. Lieut. Comdr. Richard E. Byrd, Henry B. Cecil and Victor Herbster were the originators of the plan. Adm. W. A. Moffett, chief of the bureau, supported it to the point of getting appropriations made. In the Bureau of Navigation, which handles all matters pertaining to personnel, Capt. K. M. Bennett and Comdr. J. A. Schofield prepared and supported estimates that would allow the program to be carried out.



*Planes ready to be "put over the side" at the Reserve Unit located at Squantum, Mass. Two planes can be seen in the water.*

Later came the present plan of building squadrons for mobilization as such. The late Lieut. Comdr. Noel Davis was responsible in part for this. Since his death the position he occupied in the Bureau of Navigation has been held by Lieut. Comdr. Harold W. Scofield, who has carried on the work. Commander Scofield has been connected with aviation for a number of years. He was a graduate of the second class at Pensacola and holds a naval aviator's designation bearing the number "28". He has contributed largely in the present development of naval reserve aviation.

*Adm. William A. Moffett, chief of the Bureau of Aeronautics.*

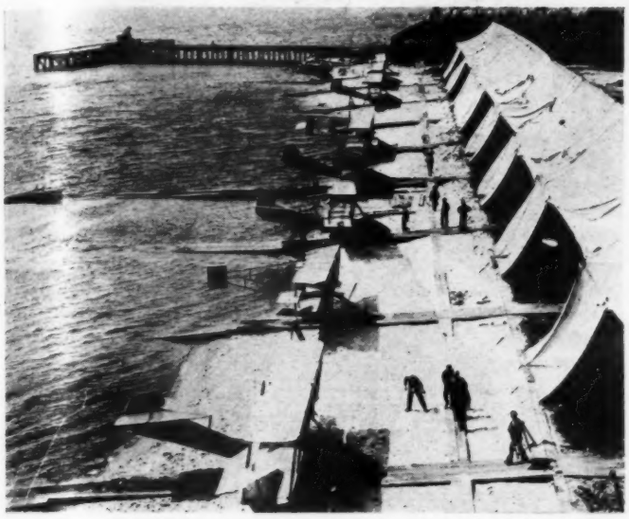
"Little need be said of the work of Capt. C. R. Train, who is director of Naval Reserve personnel," said the officer who is being quoted. "It is too well-known to require much comment. While aviation is only a part of his job, he has been tremendously interested in its development as a branch of the reserve and he is responsible to a large extent for the success with which the plan is meeting."

No time was lost by the Navy Department after the formulation of the plan for the organization of the aviation reserve. In 1923 two Naval Reserve Aviation units were established and the training of the first classes of reserve student aviators was started. One of the units, or bases, as they are now known, was at Fort Hamilton, N. Y., but it was later moved to the present site at Rockaway Beach, L. I. The other was established at Squantum, Mass. As the program was enlarged upon, two more units were created. The third base was established in 1924 at Great Lakes, Ill., and the fourth at Sand Point, Wash., in 1925.

The Reserve Aviation units are the primary training schools for student naval reserve aviators. These bases are in reality small naval air stations. Each is located on a sheltered body of water where seaplanes are landed. At one or two of the units, landplane fields have been laid out and are now in use. There are rigging and machine shops at each so that the planes may be completely overhauled. Hangars, barracks, offices

and mess halls have been erected also. In many cases, these buildings are only temporary structures, this is true, for example, of the base at Sand Point, the last of the four units to be established.

In the past, the grand old "N-9", the type of seaplane in which many famous naval aviators made their first flights,



*The flight beach at Pensacola in the early days of naval aviation.*

has been standard equipment for the primary training of reserve student aviators. The first ships of this type were manufactured in 1917. They are much like the Army's time-honored "Jennies", except that the N-9's have a larger wing span to provide the additional lift necessary for carrying a seaplane pontoon. The power plants are 150 hp. Wright Hispano-Suiza engines.

It took a long time to develop a training plane which was better than the N-9. There are many who are still willing to argue that the N-9 was the best training plane the Navy ever had. But with the development of the radial air cooled engine and its adoption by the Navy for practically all types of service planes, the N-9 outgrew its usefulness. The Consolidated training plane, known to the Navy as the "NY-2", is replacing the N-9. It is contemplated by those in charge of naval reserve aviation that six of the new Consolidated planes, powered with Wright "Whirlwind" engines, will be available for training purposes at each of the four units this summer. The N-9's will not be used after this year.

### Advance Work at Hampton Roads and San Diego

Advanced training of student naval reserve aviators has been conducted in the past by the personnel of the naval air stations at Hampton Roads, Va., and San Diego, Calif. The students who received their primary training at Great Lakes and the two eastern stations were sent to Hampton Roads, while those from the Sand Point base were sent to San Diego. The advanced training has been handled at the two naval air stations in the service types of planes available at each, adhering as closely as possible to the syllabus for flight training issued by the Bureau of Navigation. The work will be conducted hereafter by the naval air station at Pensacola, Fla., it has been announced by officials of the bureau.

"To be eligible for enlistment as a student aviator the applicant must be more than eighteen years of age and less than 28 at the time he reports for primary flight training," says a letter entitled the "Selection and Training of Student Reserve Aviators," sent by the chief of the Bureau of Navigation to the commandants of all naval districts, the commandant of the local Navy Yard, the commanding officers of the naval air stations at Hampton Roads and San Diego and the commanding officers of the four reserve units.

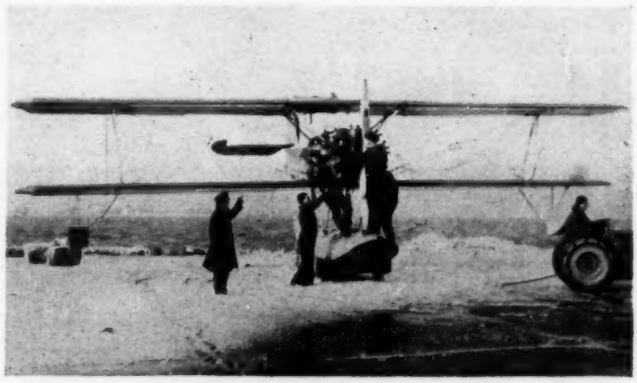
"Young applicants are preferred, in general, because they remain active fliers for a longer period of time," the letter continues. "The applicants must be college graduates, attending college with the expectation of graduating, or possess the equivalent of a college education. They must be American citizens, and they must have their permanent residences in the city in which the aviation division is located to which they will be attached after completing the training and receiving their commissions.

"In addition to the ordinary physical examination, all student aviators, before being ordered to primary flight training, must have passed a flight physical examination within six months of the date that they report for flight training. Requests for waivers of physical defects for student aviators will in no case be granted. If a naval flight surgeon is not available in the locality, an examination by an Army flight surgeon will be honored, providing satisfactory arrangements can be made locally to have him conduct the examination.

### Length of Ground School Varies

"The complete course of training for student aviators, leading up to a commission as ensign in the United States Naval Reserve, consists of the preliminary ground training, primary flight training and advanced flight training. The preliminary ground training is conducted while the students are on inactive duty. Lectures are held once or twice weekly, or oftener if desired. The length of the ground school course varies according to the frequency of the lectures. If the lectures are given twice weekly, the course should cover a total of five or six months.

"After the students have satisfactorily completed the ground school course, they are eligible to be sent to the nearest reserve aviation unit for primary flight training. This course consists of 45 days' training duty with pay and allowances. The



*Lieut. John Iseman, commanding officer of the Reserve Aviation Unit, Rockaway Beach, L. I., N. Y., directing the work on an "NY" seaplane.*

student is given approximately 10 hr. instruction in flying elementary types of seaplanes, followed by 30 hr. solo flight time in the same types. Students who satisfactorily complete the primary flight training are eligible for the advanced course, which likewise consists of 45 days' training. In this course the student is given approximately 50 hr. flying in advanced types of seaplanes, ground and aerial machine gun work, bombing exercises and navigational flights. Immediately following the completion of the advanced flight work, he is examined professionally for his commission."

The ground school course for student aviators is now being conducted at 10 universities and colleges throughout the

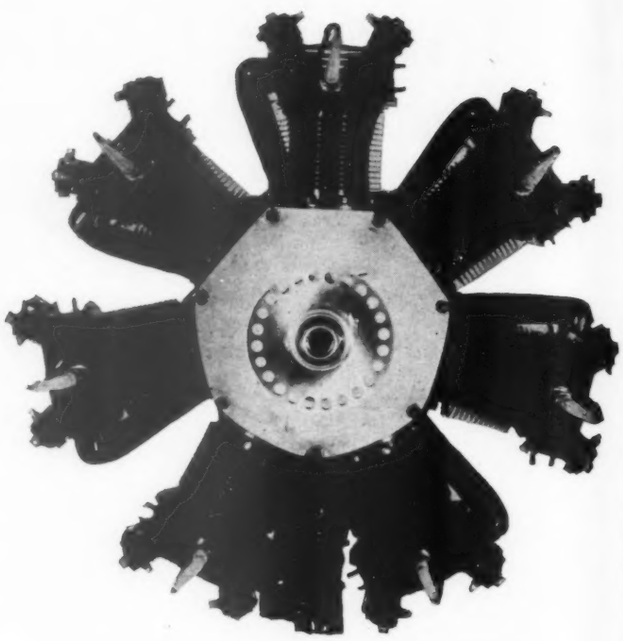
*Continued on page 1632*

# The Warner "Scarab"

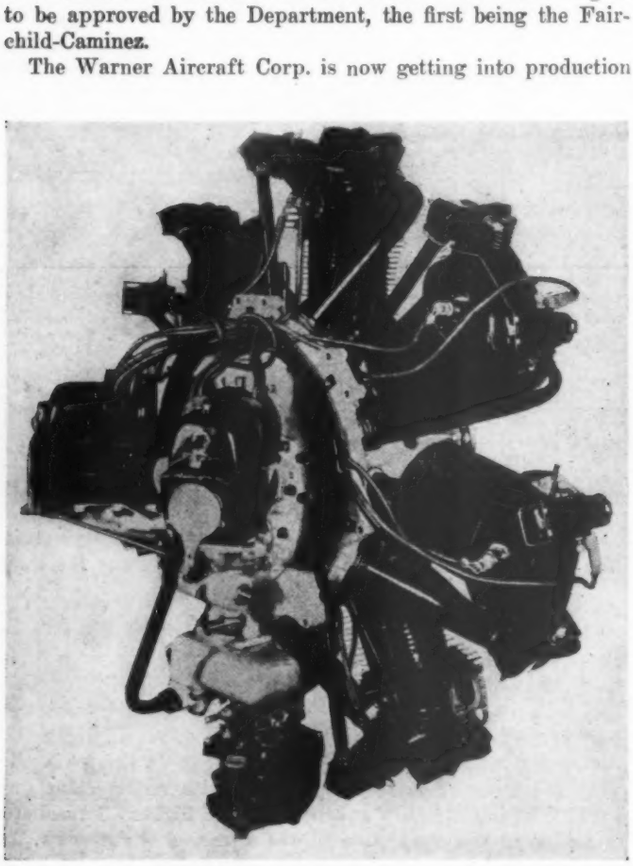
## New Seven Cylinder Radial Engine Rated at 110 Hp. at 1850 R.P.M.

APPROXIMATELY ONE year ago the first Warner "Scarab" seven cylinder radial engine was completed and submitted to its first 50 hr. test. Later, after 125 hr. of testing on the torque stand, this engine was installed in a Travel Air biplane and has been in service ever since. The first engine was built in the shops of the Bohn Aluminum & Brass Corp. of Detroit and, after successful tests were completed, the Warner Aircraft Corp. of Detroit, Mich., was formed, with Newton Skillman, president and general manager, W. O. Warner, vice president and chief engineer, Nelson Hartwick, treasurer, and W. J. Jarvie, secretary. However, it was not until February of this year that the second experimental Warner engine was completed. It was this engine which was submitted for test by the Department of Commerce and later was the second commercial engine to be approved by the Department, the first being the Fairchild-Caminez.

The Warner Aircraft Corp. is now getting into production and has started making deliveries. The first production engines were delivered for installation in the Stinson Junior monoplane, the Paramount Cabinaire and the Aero-Craft Aero-Coupe. The fourth company to standardize on a plane with this engine is the Buhl Aircraft Co. for the Buhl Junior. It is understood that the entire output has already been contracted for. The output is now approximately 10 to 12 engines a month and this will be increased gradually until it is one each day. The engine sells for $2,245.



*Front view of the Warner "Scarab" engine.*



***Rear quarter view of the "Scarab" showing the Stromberg carburetor and the two Scintilla magnetos.***

Design of the Scarab engine was started by W. O. Warner in October, 1926. Now, after much testing and after a few minor changes, production is under way. The engine is a seven cylinder, static, air cooled, radial of conventional design rated 110 hp. at 1850 r.p.m., though it has developed 122 hp. at 1950 r.p.m. Dry, without starter or hub, it weighs 270 lb. or 2.45 lb. per rated hp. The compression ratio is 5.2 and it operates at a mean effective pressure of 112. The displacement is 422 cu. in. and the bore and stroke 4.25 in. by 4.25 in. It is stated that the specific fuel consumption at full throttle is .487 lb. per hp. hr. or 9.3 gal. per hr. and that oil consumption is .008 lb. per hp. hr. The engine is quite small and presents a very clean appearance. The overall diameter is 35½ in. while the overall length is 27½ in. All accessories are placed in the rear and, according to Warner, designed with a view to minimizing the amount of time required for installation and to make it comparatively easy to streamline the cowling.

### AC Spark Plugs Used

Cylinder barrels are chrome molybdenum forgings, while the heads are of Bohn aluminum alloy. Adequate cooling fins are provided; they extend over the head and around the valves. The combustion chamber is hemispherical with two valves, one intake, and one exhaust at the sides, and with two AC spark plugs, one in front and one in back, diametrically opposite. Aluminum bronze valve seats are shrunk into the head; the two valves are of the tulip type set 45 deg. apart. They are 1½ in. in diameter and have a lift of .406 in. The intake valve is of tungsten steel while the exhaust valve is a cobalt alloy. The double valve springs are

*Continued on page 1630*

# The Aero Craft "Aero Coupe"

## All-Purpose Three Place Biplane is Powered with a Warner "Scarab" Engine and has a High Speed of 115 M.P.H.

By JOHN T. NEVILL

AERO CRAFT Manufacturing Co., the latest addition to Detroit's aircraft manufacturers, recently test flew its initial product, a three place, convertible cabin biplane, known as the "Aero Coupe". The tests were made by Capt. Clement W. Brown, president, and Capt. Carl B. Squier, secretary of the company. The plane, Captain Brown said, was to go into production as soon as the tests were consummated.

The company exhibited its craft for the first time publicly at the All-American Aircraft Show, recently held in Detroit. Because of the speed with which it was assembled for the show, it was deemed advisable to re-assemble the plane before flight tests were made. A second plane of the same model is nearing completion.

The Aero Coupe is an all-purpose biplane, intended especially for fast express or air mail feeder line service. It was designed by Captains Brown and Squier, both officers of the 107th Observation Squadron, Michigan National Guard, and World War fliers. Dwight Huntington, formerly with Stinson Aircraft Corp., and the Overcashier Aircraft Manufacturing Co., did the engineering work.

The Aero Coupe is a single bay design, with a Clark Y airfoil section. The wings have no taper, neither in plan form nor section. Rectangular spruce spars and Barling type spruce ribs with plywood gussetts, comprise the principal wing interior. Three bays are made in the drag bracing, which is double and made of square section steel. MacWhyte tie rods are planned for use in forthcoming models, although wire and turnbuckles were used in the initial product. Drag struts are of spruce with cold rolled steel fittings. The wing web and cap strips also are of spruce. The leading edge, top and bottom, forward of the front spar is covered with sheet duralumin, the trailing edge being a triangular section of sheet aluminum. The wings are covered with Flightex, the fabric being machine sewed and attached by the "slip-cover" method. Five coats of clear dope and two coats of orange Berry Brothers lacquer, complete the finish on the wing exterior. All woodwork in the wing interior is varnished, the fittings being protected with Berryloid red oxide primer. Exterior wing struts, as well as those of the undercarriage and stabilizer, are chromium plated, and streamlined.

*Front view of the "Aero Coupe" powered with a 110 hp. Warner "Scarab" engine.*

Wing fittings on the Aero Coupe are all internal, and of conventional design. The wings are wired for lights or radio and the plane is equipped with running lights. Wing tips are constructed of aluminum tubing. The ailerons of the overhanging balance type are of narrow chord, comprising but 12 per cent. of the wing surface. They are hinged to the wing at the bottom of their leading edge, the gap in the upper surface being closed by a sheet of duralumin, making the joint as streamlined as possible.

*Continued on page 1627*

*Capt. Clement W. Brown, president of the Aero Craft Mfg. Co., standing at the wing of his company's new product, the "Aero Coupe".*

# Bowser Fueling Equipment *for* Airports

By C. P. GRIFFITH
*Chief Engineer, S. F. Bowser & Co.*

THE FIRST step taken by S. F. Bowser & Co., Fort Wayne, Ind., in the task of developing a suitable type of stationary equipment for aviation fueling purposes, was to study the existing conditions. The company's officials consulted experts on commercial aviation, and visited fields in operation in order to determine just what the conditions were that must be met, and what type of equipment would best meet those conditions, not only at that time but also in the future.

From this study a number of fundamental requirements seemed to stand out.

1. Ability to deliver any quantity desired in a steady stream at the point of delivery.
2. Speed to compare favorably with the speed now available in fueling automobiles.
3. Positive control at the point of delivery to avoid overflowing tanks and fire hazard.
4. Accuracy in measuring fuel delivered.
5. Elimination of moisture, water and dirt from gasoline.
6. No ground hazard.
7. Large serving radius.

While all of these features may be present in greater or lesser degree in either stationary or mobile equipment, there are certain fundamental differences between stationary and mobile equipment which should be considered.

### Stationary

With stationary equipment, plane must be taxied or taken to fueling point.

Stationary equipment uses same tankage for storage and fueling purposes.

Continuous fueling capacity limited only by size of storage tank.

Low initial cost.

Low depreciation.

Practically no upkeep expense.

May be identified as servicing point from the air to visiting planes so that in landing they can taxi in position for service.

No ground hazard when properly designed.

### Mobile

With mobile equipment, service may be taken to the plane.

There must be storage and pumping equipment by means of which the mobile equipment can be filled.

Any mobile outfit is limited in storage capacity and consequently in fueling capacity without replenishment.

High initial cost.

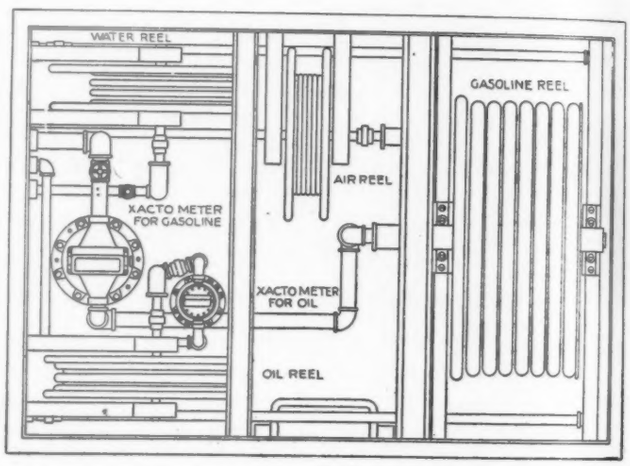
Heavy upkeep expense.

Large depreciation.

Difficult to handle in wet weather.

Cuts up flying field.

These considerations convinced Bowser & Co. that there was a real place for a suitable type of stationary equipment for aviation fueling purposes and the equipment described in this article is of that type.



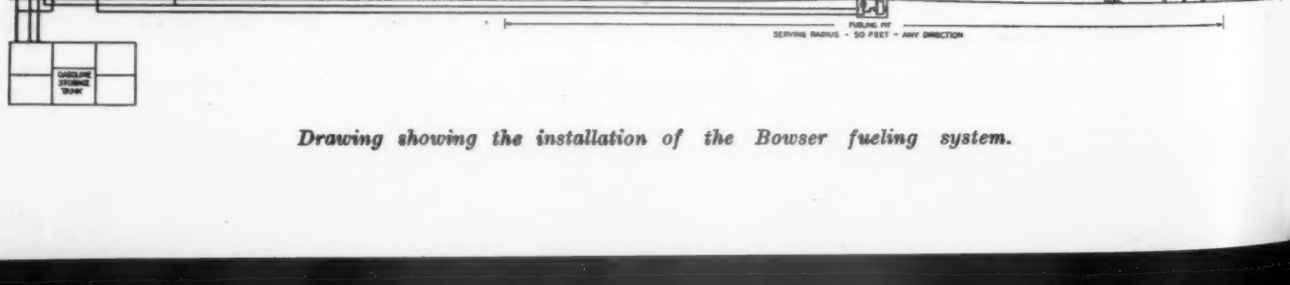

*Drawing of the inside of the Bowser fueling pit for gasoline, oil, water and air service.*

It consists of one or more fueling points on the flying line enclosed in a metal water proof box flush with the ground level, connected to a pumping unit located in the hangar or oil house.

Each pit or fueling point has a fueling coverage of a circle 100 ft. in diameter with the pit in the center and is so constructed that when the covers are closed, no ground hazard is offered and planes can taxi directly over the pit.

In the pit is located a hose reel accommodating 50 ft. of gasoline hose. The hose is full of gasoline at all times and

*Continued on page 1626*




*Drawing showing the installation of the Bowser fueling system.*

# *The* "Starling" Biplane

## A Three Place, Open Cockpit Biplane of Conventional Design and Construction Powered with an OX-5

By H. A. LINDBERGH

THE "STARLING", which is manufactured by the Starling Aircraft Co., is the second plane to be built in Minneapolis, Minn., in quantity production, the first one being the Mohawk "Pinto" produced by the Mohawk Aircraft Co. Although the first Starling is powered with an OX-5 engine, a detachable engine mount is provided so that any type up to and including the Wright Whirlwind can be installed if desired. This new production plane is a three place, open cockpit biplane of conventional design and construction, having a steel fuselage, wood wings, split type landing gear and other general features of construction common to this type of light commercial plane.

*Front quarter view of the "Starling" powered with an OX-5 engine.*

The first Starling was officially test flown recently by Gene Shank at the Wold-Chamberlain Airport, during which the plane took off after a comparatively short run, climbed to about 800 ft. in the first minute and was then put through a number of maneuvers to test the construction and the reaction of the plane under severe conditions. The Starling was found to be under perfect control at all times and responded to the use of the controls with little physical effort. Orville H. Hickman is the designer of the Starling.

As in a large percentage of the planes built in this country, the fuselage and the tail group are built up with welded steel tubing; the fuselage being of Pratt truss construction. The horizontal stabilizer is adjustable in flight with Arens control being used, as well as for the ailerons and the throttle. The rudder is actuated by cables controlled by foot pedals, so no pulleys are necessary on any part of the plane for the various controls. The tail skid is of oak with a steel shoe and is rubber wrapped, an auxiliary tail skid being provided at the end of the fuselage for emergencies.

By using a modified Aeromarine section for the lower wing it is claimed that a fast take off and slow landing is possible, while a modified Clark Y section for the upper wing gives better maneuverability and a higher top speed. The upper wing is in three parts, a five foot center section with two outer panels, while the lower wing is built up of two panels. The internal wing construction is conventional with wood ribs and routed spars, the leading edge of the upper wing being made of duralumin while that of the lower wing is plywood. Hand holes are provided on the forward end of each panel of the lower wing for ease in handling on the ground. The cabane and interplane struts are of the N type made of nickel plated tubing and streamline wires are used for bracing. The center section is wide enough so the cabane struts, attached to the upper fuselage longerons, can be placed in such positions as to allow ready access to the passengers' cockpit, and in addition the interference with the pilot's forward vision is also greatly reduced.

The roomy pilot's and passengers' cockpits are completely upholstered and the seats are fitted with comfortable cushions. Both of the windshields are so arranged on the fuselage as to afford ordinary protection and yet not too large as to add too much unnecessary parasitic resistance. To the rear of the pilot is a 30 in. by 24 in. by 14 in. luggage compartment. Right or left throttle is optional with dual control being standard equipment. Instruments as required by the Department of Commerce are furnished, including the first aid kit and fire extinguisher. The head rest, instead of being short as is customary on most planes, tapers on the turtle back from the end of the pilot's cockpit to the vertical fin. As is true with the majority of the latest production planes, a door is provided on the left side of the fuselage to allow quick access to the passengers' cockpit.

The radiator on the OX-5 model is placed in the nose of the plane to eliminate the otherwise parasitic resistance and in addition this feature of construction enhances the general appearance as well as reducing to a minimum the interference with the forward vision of the pilot. The engine bed is built up of ash with steel hangers, brake lining being used under the heads of the mounting bolts and under the engine feet while heavy steel springs are placed under the nuts of the bolts to dampen engine vibration. A 40 gal. gasoline tank is mounted in the fuselage immediately to the rear of the engine in such a position that positive gravity feed is possible. Through this arrangement of installing the tank in the fuselage instead of smaller ones in the wings, it is possible to build a more inherently stable plane in that it is near the point where all weights are centralized. A Hamilton wood

*Side view of the three place OX-5 powered "Starling" biplane.*

*Continued on page 1625*

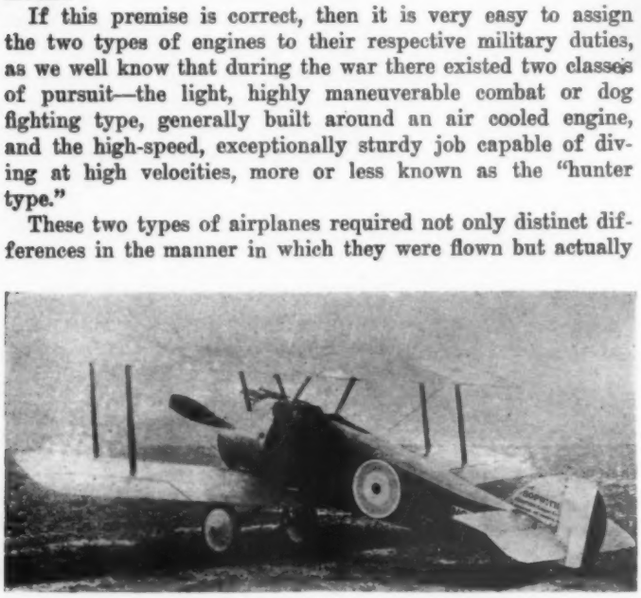
# Applying Racing Practices *to* Military Designs

By TEMPLE JOYCE

WITHOUT DOUBT, the British last year, proved that with the best brains available in the air cooled and water cooled engine fields, as far as high speed racing results are concerned, the water cooled engine still stands in the lead. The reason for this evidently is due to the persistence of the air cooled engineers to continue the radial design in its original form, which due to its large projected area makes it impossible to properly cowl or streamline sufficiently to get speeds comparable with the small projected area water cooled engine. The success, however, obtained with the British De Havilland "Tiger Moth" with an in-lined air cooled engine shows promise of possible improved results along lines other than the radial type. Unquestionably at speeds under 200 m.p.h., the radial air cooled engine permits characteristics of plane construction and performance that tend towards a vastly superior product for all around use. Where speed alone is desired, and all other factors such as maneuverability, maintenance, vulnerability, are considered of minor importance, the water cooled engine stands paramount.

If this premise is correct, then it is very easy to assign the two types of engines to their respective military duties, as we well know that during the war there existed two classes of pursuit—the light, highly maneuverable combat or dog fighting type, generally built around an air cooled engine, and the high-speed, exceptionally sturdy job capable of diving at high velocities, more or less known as the "hunter type."

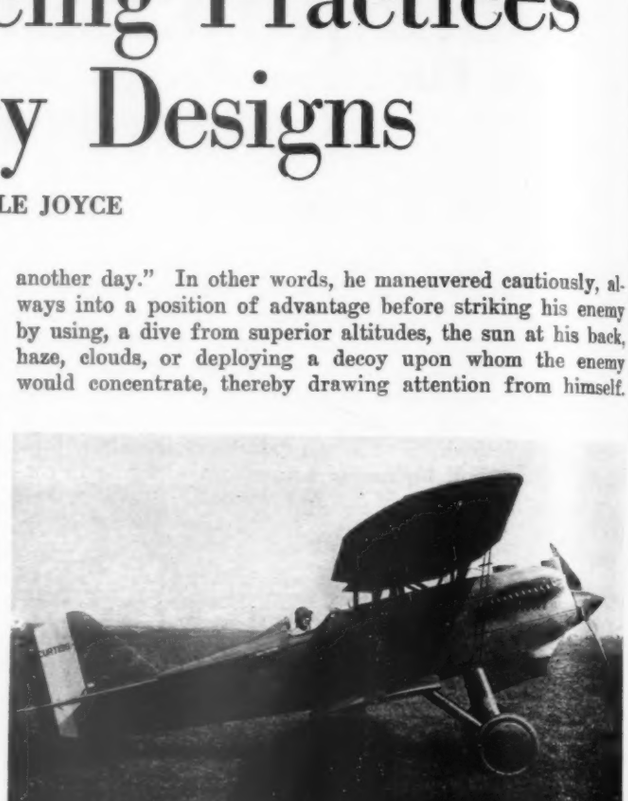
These two types of airplanes required not only distinct differences in the manner in which they were flown but actually



*A war time Sopwith "Camel" powered with a 130 hp. Clerget rotary engine.*

from a war standpoint required pilots of a different temperament.

The highly maneuverable type of plane was generally manned by an individual who feared nothing and was ready to combat anybody or any group regardless of number, purely for the love of the combat. He was exemplified in the young dashing type of British pilot. The high-speed diving type of plane was generally manned by a calculating hunter-type of individual, who had back of his mind always the old adage that "he who fights and runs away, lives to fight another day." In other words, he maneuvered cautiously, always into a position of advantage before striking his enemy by using, a dive from superior altitudes, the sun at his back, haze, clouds, or deploying a decoy upon whom the enemy would concentrate, thereby drawing attention from himself.



*A Curtiss "Hawk" powered with a Curtiss D-12 engine.*

I do not mean by this that the combat type of pilot did not sometimes use the same methods at the beginning of an encounter, but the difference is that after the high diving type of plane had once fired on its enemy, due to its excessive high speed and lack of maneuverability it did not stay to combat whereas the highly maneuverable aircraft, if it missed in its first attempt at firing would immediately circle and continue combating until one pilot outmaneuvered the other and brought his opponent down. If the high speed machine when it is within 200 or 300 yd. of its objective is detected by the pilot in the other plane, there is no doubt that its advantage is immediately lost because it cannot maneuver in time or sharply enough to keep its guns on the enemy, nor can it stay to combat because of the danger of being outmaneuvered; therefore it must withdraw and wait for another opportunity for surprise attack. I am discussing here only the offense angle of these two planes; the defensive side is different.

As a majority of the pilots during the war were brought down from surprise attack, whether by a high speed diving type of plane or the highly maneuverable, we unquestionably must be forced to pay a great deal of attention to this factor in air fighting. It is also unquestionable that the higher the speed of a plane the greater chances it will have to pounce on its enemy without being detected.

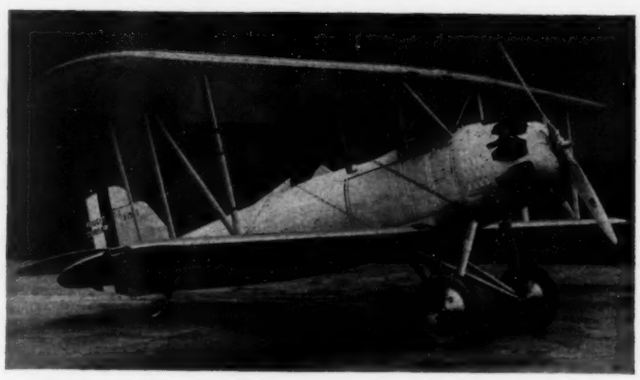
One has only to go into the air and operate at around ten thousand feet even on the clearest of days trying to keep an eye on a number of machines that are operating in his vicinity, to realize how difficult it is to know what each machine is doing, where they are going, and to later pick them up at another point in their flight. One's ability to lose sight of

a plane in a very definite sector of the sky is surprising, and the rapidity with which planes at other times jump into your vision at close range from a sector of the sky that a minute before seemed absolutely clear is quite startling. These conditions held true at speeds around 100 m.p.h. during the war, and it is easy to realize how much more aggravated they would be at speed of say 300 m.p.h. Imagine a condition where a group of fighting planes were traveling at the rate of 160 to 180 m.p.h., and the enemy with a squadron of machines capable of making 250 to 300 m.p.h., carrying only one gun and a small amount of ammunition were operating in the same vicinity. The rapidity of approach of these planes would be so great that undoubtedly time after time they could jump upon the 180 m.p.h. planes before they knew what was happening. A pilot in a single seat machine can not fly his machine, look for enemy aircraft ahead, and also keep his neck stretched to the rear for long enough periods to absolutely assure himself against surprise from that direction. In other words, it is just impossible for a pilot to look to the rear enough to absolutely protect himself and at the same time carry on his other functions. This means that there are blank periods when the tail of a single seater is not being watched, and a plane capable of making 300 m.p.h. could, during the course of a day's operations even where there was no haze or clouds, have innumerable chances to pick off enemy machines without being detected or intercepted.

If we could imagine another Western Front War with the Central Powers having pursuit planes of the class of the existing single-seat fighters, and the Allies had at their disposition, we shall say, fifty Supermarine Schneider Cup racers fitted with one machine gun very neatly installed, these planes could operate from a lake or river adjacent to the front, they could reconnoiter and carry out whole army reconnaissances, prey upon enemy aircraft that happened to be sleeping within their path, and never be touched by opposing aircraft.

The fastest speed of any existing pursuit plane today in a vertical dive is around 300 m.p.h. By the time it is flattened out, its horizontal flight speed drops below 250, which would mean that a squadron of supermarine racers fitted out as light pursuit planes could never be attacked if the pilot were alert; they actually could never be intercepted. This type of plane undoubtedly could and would not go to high altitudes where it would be outmaneuvered and outperformed by the lightly loaded air cooled fighters, but there are many functions of aerial warfare that prohibit planes from going beyond 4,000 to 8,000 ft. such as some classes of photography, fleet spotting, corps and army reconnaissance, scouting, artillery reglage, etc.

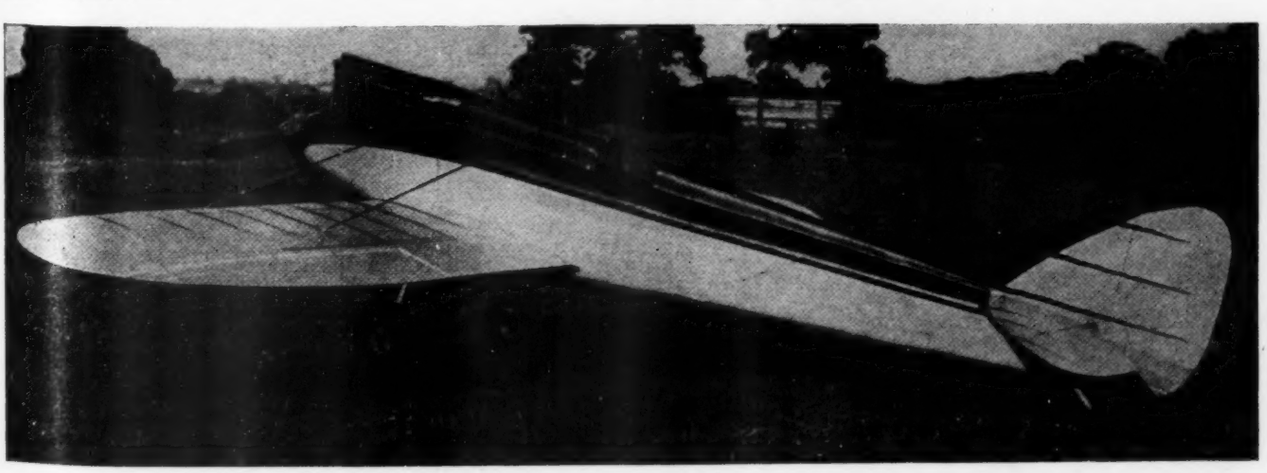
There has been a tendency in this country to build fighting planes capable of carrying hundreds of ammunition and innumerable hours of gas for long distance flights, and in addition, a number of unnecessary provisions for bombing, etc., with the load factors based on the maximum load conditions, which unquestionably reduced the high speed to very little more than our observation planes. Furthermore, with the desire for economy that swept the United States after the war, our designs were laid out for production, with square corners and crude cowling, etc., certainly not clean streamline forms. There is no doubt that by applying racing practices



*A Vought "Corsair" powered with a Pratt & Whitney "Wasp" engine.*

and using the existing 425 hp. water and air cooled engines, eliminating part of the excessively high military loads and general refinements in the structure of the plane (which, however, would increase the production cost), speeds of more than 20 to 30 miles in excess of existing single seat records could be obtained. With additional study on cutting down the size of the projected area of engines, increasing their power slightly, and possibly in the future, reducing the size of the pilot, limiting his weight to jockey specifications, speeds could be looked forward to around 225 to 250 m.p.h. The discrepancy between this top speed and existing racing plane records of over 300 m.p.h., is due to the fact that racing planes land around 100 m.p.h., and use 1000 hp. or more, whereas military types land around 60 to 65 m.p.h.

It is not recommended that the services adopt racing planes as standard single seat fighters, but racing practices applied to service designs will be distinctly beneficial. Any activity that will increase the performance of all the existing classes of planes whether single seat fighters, bombers, etc., as racing can and should do, ought to receive the unstinted support of the military services.



*The De Havilland "Tiger Moth" powered with a "DH" in line, air cooled engine developing 130 hp. which made a speed of 186.5 m.p.h.*

## California Still Leads in Number of Planes With Illinois Now Second and Texas Third

A NEW compilation giving the status of aircraft in this country by states and corrected to May 1 has been issued by the Department of Commerce. The statistics show 3,385 identified, licensed, and temporarily numbered planes. Ten states have more than 100 planes, California being well in the lead with 533, Illinois second with 276, and Texas third with 244 —leading New York's total of 243 by one. The other six states of the first 10 and their totals are: Michigan 230, Ohio 190, Missouri 172, Pennsylvania 166, Oklahoma 109, and Kansas 102.

The compilation follows:

STATUS OF AIRCRAFT BY STATES MAY 1, 1928

| | Identified | Licensed | Temporary Number | Total |
|---|---|---|---|---|
| ALABAMA | 3 | 1 | 4 | 8 |
| ARIZONA | 1 | 0 | 8 | 9 |
| ARKANSAS | 10 | 13 | 4 | 27 |
| CALIFORNIA | 171 | 114 | 248 | 533 |
| CAROLINA N. | 6 | 18 | 9 | 33 |
| CAROLINA S. | 1 | 7 | 6 | 14 |
| COLORADO | 6 | 9 | 9 | 24 |
| CONNECTICUT | 8 | 18 | 12 | 38 |
| DAKOTA N. | 16 | 0 | 2 | 18 |
| DAKOTA S. | 6 | 4 | 5 | 15 |
| DELAWARE | 0 | 4 | 2 | 6 |
| DIST. OF COL. | 0 | 30 | 4 | 34 |
| FLORIDA | 22 | 29 | 9 | 60 |
| GEORGIA | 16 | 9 | 5 | 30 |
| IDAHO | 2 | 1 | 7 | 10 |
| ILLINOIS | 75 | 123 | 78 | 276 |
| INDIANA | 24 | 12 | 42 | 78 |
| IOWA | 20 | 23 | 8 | 51 |
| KANSAS | 36 | 37 | 29 | 102 |
| KENTUCKY | 5 | 5 | 7 | 17 |
| LOUISIANA | 18 | 8 | 12 | 38 |
| MAINE | 3 | 4 | 3 | 10 |
| MASSACHUSETTS | 17 | 26 | 17 | 60 |
| MARYLAND | 6 | 11 | 9 | 26 |
| MICHIGAN | 66 | 89 | 75 | 230 |
| MINNESOTA | 18 | 26 | 20 | 64 |
| MISSISSIPPI | 1 | 4 | 1 | 6 |
| MISSOURI | 47 | 68 | 57 | 172 |
| MONTANA | 9 | 4 | 11 | 24 |
| NEBRASKA | 11 | 18 | 25 | 54 |
| NEVADA | 2 | 0 | 0 | 2 |
| NEW HAMPSHIRE | 0 | 3 | 1 | 4 |
| NEW JERSEY | 8 | 22 | 24 | 54 |
| NEW MEXICO | 2 | 1 | 2 | 5 |
| NEW YORK | 84 | 42 | 117 | 243 |
| OHIO | 58 | 58 | 74 | 190 |
| OKLAHOMA | 36 | 32 | 41 | 109 |
| OREGON | 3 | 7 | 16 | 26 |
| PENNSYLVANIA | 35 | 82 | 49 | 166 |
| RHODE ISLAND | 5 | 0 | 0 | 5 |
| TENNESSEE | 10 | 19 | 6 | 35 |
| TEXAS | 128 | 47 | 69 | 244 |
| UTAH | 1 | 5 | 2 | 8 |
| VERMONT | 0 | 0 | 2 | 2 |
| VIRGINIA | 8 | 19 | 14 | 41 |
| WEST VIRGINIA | 6 | 5 | 5 | 16 |
| WASHINGTON | 10 | 34 | 21 | 65 |
| WISCONSIN | 30 | 22 | 29 | 81 |
| WYOMING | 2 | 4 | 3 | 9 |
| CUBA | 1 | 0 | 0 | 1 |
| HAWAII | 0 | 0 | 2 | 2 |
| ALASKA | 0 | 3 | 7 | 10 |
| | | | TOTAL | 3,385 |

## Junkers W-34 Plane Built for Australian Company Uses a Bristol Jupiter Engine

A BRISTOL Jupiter engine has been installed in a Junkers W-34 monoplane constructed for the New Guinea Gold Co., an Australian concern which is at present prospecting for gold in New Guinea. The gold mining area is about 65 mi. from the coast at an altitude of about 10,000 ft. There is no road or even a reasonable track, so that when the area is approached by carriers it is necessary for them to carry food for 16 days, allowing eight days to get there and eight days for return. Part of the track over the mountains is so steep that men are obliged to haul themselves up by means of ropes. As a result, the round trip by carrier is probably about three

*New Guinea gold prospecting will be carried on with the aid of this Jupiter powered Junkers.*

weeks, allowing one to start with only a 40 lb. useful load. The air trip can be completed in about an hour, so that the airline should prove a paying proposition. On this service there is no possible landing place between the two terminals.

The W-34 is a low wing monoplane of duralumin construction, with both wings and fuselage covered with corrugated sheet duralumin. It is primarily a mail and freight carrier, with the pilot sitting in the open in front of the mail compartment of 126.5 cu. ft. An 89 gal. fuel tank is located in the center section. The plane has a span of 60 ft. 2 in. and a length of 36 ft. 9 in.; the wing area is 463 sq. ft. The W-34 weighs 3,130 lb. empty and carries a useful load of 1,500 lb. giving it a total weight of 4,630 lb. It has a high speed of 127 m.p.h. and a cruising speed of 103 m.p.h. It lands at 53 m.p.h. and climbs from 3,280 ft. to 6,560 ft. (1,000 meters to 2,000 meters) in 3.9 min. The ceiling is 19,700 ft.

## George Titterton is Now Project Engineer Of Keystone Aircraft Corp., Bristol, Penna.

GEORGE TITTERTON has joined the Keystone Aircraft Corp., Bristol, Penna., as project engineer. Of late, Mr. Titterton has been cooperating with Prof. Alexander Klemin of New York University in the preparation of a series of articles on stress analysis appearing in AVIATION. Before that time he was in the engineering department of the Bureau of Aeronautics, Navy Department, at Washington.

## Gray Goose Airlines, Inc., Offers a 55 Mi. Sightseeing Trip Over Chicago Twice Daily

A 55 mi. sightseeing trip over Chicago is now offered twice daily by the Gray Goose Airlines, Inc., of that city. The Ford-Stout tri-engined plane of the company, which seats 14 passengers, leaves the Chicago Municipal Airport at 11:30 A.M. and 3:30 P.M. each day. Night flying will be booked whenever desired by patrons, officials announce.

## National Model Airplane Meet Scheduled To Be Held at Detroit, Mich., June 29-30

MORE THAN a thousand boys from every place in the United States between Portland, Maine, and Honolulu are expected to participate in the National Model Airplane Contests to be held in Detroit June 29-30 by *The American Boy Magazine*. This magazine, which organized the Airplane Model League of America and has built its membership up to more than 150,000 in eight months, has been designated by the National Aeronautic Association to conduct the contests for Stout Indoor Trophy, the Mulvihill Outdoor Trophy, and the new scale model competition.

Jack Loughner of Detroit is the present holder of the Mulvihill Trophy, and Charles Dybvig, Detroit, of the Stout Trophy. To stimulate interest in these contests, trips to London, Paris, and Geneva are offered to boys under 21 yr. in the 1928 contests. The winner of the scale model contest, to be held for the first time this year, will be taken to Los Angeles to attend the National Air Races. There are also $3,000 in cash prizes and 198 medals to be presented.

### Many Newspapers Cooperating

Many of the entrants in the contest will be sent to Detroit as official representatives of the cities or districts in which they live, through the 53 newspapers cooperating in the promotion of the contests. Each of these papers is to hold preliminary contests to select its own champions. Any model builder in the United States may enter the national tourney, however. The cost will be approximately $20 for the two-day meet—this to cover hotel, meals and all such expenses—and transportation. Plans are being made to obtain reduced rail rates from the railroads, so that every person attending the meet should apply for a certificate when buying his ticket to Detroit.

Contestants may obtain entry blanks from any of the newspapers conducting local contests, or from the Contest Director, *The American Boy*, 550 Lafayette Boulevard, Detroit. Entry blanks should be returned not later than June 20. It is planned to charge a small entry fee, which will be returned when the contestant actually enters a model in a contest. Scale models may be shipped to the same address, express prepaid, if they are sent by June 14; thus it will be possible for builders to enter one of the three contests without being actually on the ground. For flying contests, however, builders must handle their own machines.

## Pioneer Instrument Co., Brooklyn, Issues Circulars Describing Two of Its Products

THE PIONEER Instrument Co. of Brooklyn has published two new circulars, one describing its Speed and Drift Indicator and the other its Altimeters. The Speed and Drift Indicator, or Drift Angle Meter, is described in detail giving the principle of its operation and method of installation. In the other pamphlet Pioneer Altimeters are described and installation instructions given. These pamphlets may be obtained from the Pioneer Instrument Co., 754 Lexington Ave., Brooklyn, N. Y.

## Frank Baker Company Becomes Buhl Plane Distributor With First Airsedan Received

FOLLOWING ACQUISITION of the sales rights for Buhl Aircraft in California, Arizona, and Nevada by the Frank Baker Aircraft Co. of Culver City, Calif., a Buhl five place Airsedan was flown to Los Angeles from Marysville, Mich., by Bob Blair, chief pilot for Frank Baker.

Mr. Blair was accompanied throughout his entire flight by his 16 yr. old daughter, Esther, a Los Angeles high school student. The trip was made in 38 flying hours. The new cabin biplane is to be sent on a demonstration trip through the Western States, it is said. Frank Baker is also Waco distributor for Culver City.

## Irwin Aircraft Co. of Sacramento, Calif., Builds a Meteorplane for Texas Company

IRWIN AIRCRAFT Co., Sacramento, Calif., recently completed a new Meteorplane for the Texas Pacific Coal & Oil Co., maker of Amlo lubricating oils. This little biplane weighs only 275 lb. empty and 575 lb. with full load. It is stated to have a top speed of 90 m.p.h., a cruising speed of 75 m.p.h., and a landing speed of 26 m.p.h. The span of the

*New Meteorplane built for Amlo manufacturer.*

lower wing is much greater than that of the upper wing, and there are ailerons on the lower wing only. The ailerons are differentially controlled. A 79 cu. in., four cylinder, two cycle engine is the power plant. It is rated at 20 hp. at 1730 r.p.m.

As the fuel consumption is but 1½ gal. per hr. it is claimed that the plane has a range of 400 mi. The latest model Meteorplanes have inspection windows provided over all pulleys, handles in wings for convenience in handling, fitting on under side of lower wing for tying plane down, luggage compartment, navigation lights, and a complete instrument board. The standard color scheme is red fuselage, yellow wings, and black trimmings.

## Bird Wing Commercial Airplane Co. Issues Pamphlet Describing Its Imperial Biplane

THE BIRD Wing Commercial Airplane Co., St. Joseph, Mo., has prepared a pamphlet describing the Bird Wing Commercial Imperial OX-5, open cockpit biplane. This plane is planned to sell for $2795. A number of this type have already been built and are being used for instruction by the Bird-Wing School of Aviation. It is of conventional design with wooden wings and welded steel tube fuselage, fabric covered. The landing gear is of divided axle type and the tail surfaces are built entirely of steel tubing covered with fabric.

## Mid-Plane Sales & Transit Co., Minneapolis, Appointed "Command-Aire" Distributor

THE ARKANSAS Aircraft Co. of Little Rock, Arkansas, has appointed the Mid-Plane Sales & Transit Co. of Minneapolis, Minn., (also distributor of the Fairchild Cabin monoplanes) as the distributor of the Command-Aire in Minnesota, Wisconsin, northern Iowa, North and South Dakota, and Montana. In addition to being used as demonstrators, the Command-Aires will be placed in service for student instruction and other such activities.

## Airport Project Considered by Cincinnati Calls for Cutting of a New River Channel

MAJOR ENGINEERING operations involving the cutting of a new river channel and the filling in of a large area are being favorably considered by C. O. Sherrill, city manager of Cincinnati, and the city council, as the best means of investing the $500,000 voted by the people last autumn for the purchase and improvement of a municipal airport.

The city already has invested a small part of the money as first payment for Lunken Field, in the east end of town, which it will own in full as soon as an agreement is reached with the original minority stockholders. The Little Miami River runs through the northeast corner of the present field, subjecting it to occasional inundation.

Cutting a new channel for the Little Miami, installing a conservation system to control its waters, the building of a system of dykes and the making of a large fill-in is the project now contemplated, it being estimated that the work will require three years to complete.

By the straightening of the river, useful land will be reclaimed, and the field will be made square in shape. Experts agreed that the straightening can be effected at a comparatively low cost. Dyking, however, would cause a pond to form, so that extensive filling in also is deemed necessary. However, non-inflammable material from the city's new waste incinerator will be used, and the street cleaning department will be directed to do the work.

### Fill to Increase Area

The fill will bring the land to a 478 ft. or possibly a 490 ft. height above sea level and increase its area from the present approximate 234 acres to about 400 acres, making the field, according to aviation authorities, one of the finest in the country.

Official records for the past 66 yr. have been consulted, and it is deduced from them that when improved, the field will be flooded only seven days out of the year, and not so deeply but that it could be used on all but two days in the year.

A study of the situation was made by Acting City Manager John P. Dietrich last September, and his report has been amplified by experts employed by Sherrill. It now includes cost of the field, equipment costs, anticipated business, management, markers, lights, and the tentative cost of the newly-proposed engineering.

## Newly Organized Burlington County Aero Club Buys a Waco for Use of Members

H. H. LONGACRE is president, H. B. Smith is secretary, and William DeR. French is treasurer of the recently-organized Burlington County Aero Club at Moorestown, N. J., founded for the purpose of supplying flying instruction at net cost to its members. The club meets on the first and third Mondays of each month in the Community House there, holding its business sessions on the first Monday and its lecture sessions on the third Monday. An airport has been established on a tract of 75 gently-sloping acres, one mile outside of Moorestown, and flying operations have been started.

The club has just announced the purchase of a Waco 10 (OX-5) from John E. Thorp, 3rd, an agent for the Ludington Philadelphia Flying Service, the Philadelphia Airport lessee and operator, which has the agency in this section. The field has been marked according to regulations of the Aeronautics Branch of the Department of Commerce and is indicated from Moorestown by an arrow and a 100 ft. circle with an eight foot band. The band and letters are of white sand and are easily distinguished. A 50 ft. circle has been installed in the center of the field to facilitate recognition.

The club's hangar has been ordered and will be erected within a few weeks, according to Mr. Longacre and other club officials. Gas and oil service also will be available to visiting pilots. The airport is entirely surrounded by land suitable for emergency landings.

## Pan-American Fokker Flies to Key West Bearing Largest Single Load of Air Mail

WHAT IS called the largest single load of air mail ever transported—1,839 lb. of letters and packages—was recently shipped by air from Havana, Cuba, to the United States aboard the Pan-American Airways plane "General Machado," one of the transports operated on the first international air mail route between Key West and Havana.

The planes used are tri-engined Fokker planes powered with Whirlwind engines. The company reports that every one of its trips has thus far been made on schedule—a 100

*Before it was packed in the "General Machado", the largest air mail load nearly obscured the plane.*

per cent. operating record. Pan-American Airways is one of the first air mail contractors to give bonuses to mechanics for flights completed without mechanical trouble.

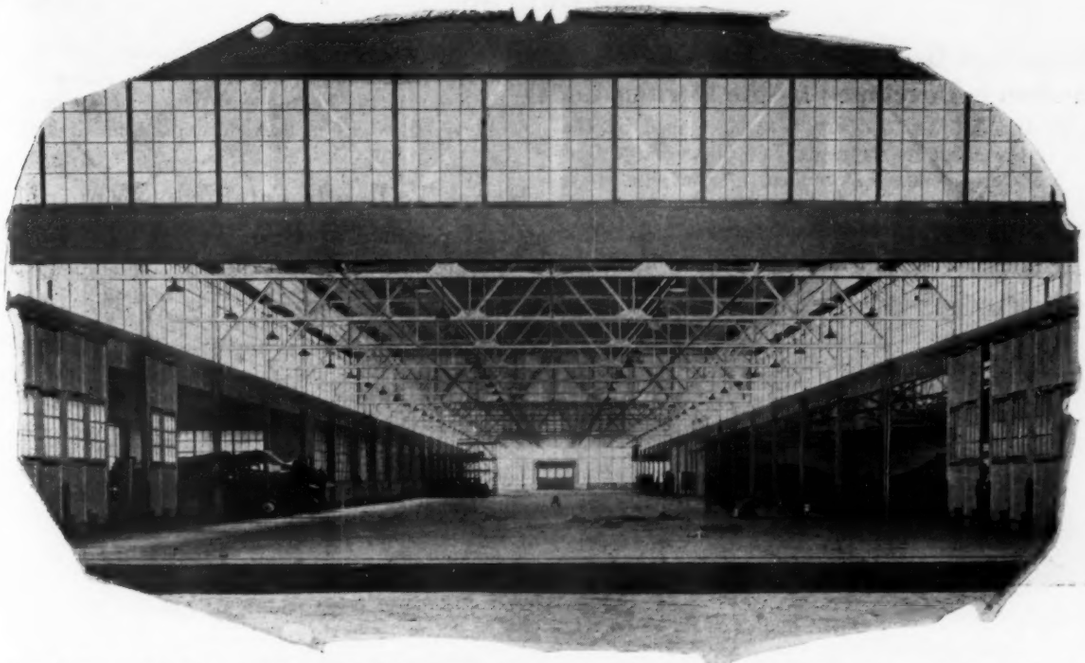
## Springfield Airport Corp. Will Distribute Arkansas Company's "Command-Aire" Plane

THAT IT will distribute the Command-Aire biplane has been announced by the Springfield Airport Corp. of Springfield, Mass. The first plane is to be flown in from the Arkansas Aircraft Corp., the manufacturer, at Little Rock, by Lowell R. Bayles, formerly of Christopher, Ill.

The Springfield company also announced the leasing of a field at Pittsfield, about 60 mi. from Springfield, which is operated by Roscoe W. Brinton. Brinton will act as agent in handling Command-Aire and Waco sales. The Pittsfield airport will also serve as the terminal for the inter-city airline for passengers and freight.

## Texas Mexico Airways Co. of San Antonio Acquiring 160 Acre Field at Kerrville, Tex.

TEXAS MEXICO Airways Co. with headquarters at San Antonio, Tex., has closed negotiations for a 160 acre field at Kerrville, Tex., to be used as a subsidiary airport at which instruction in flying will be given with regular passenger plane service planned for the future to connect the city with San Angelo, Tex. Other lines from the latter point are to be met which offers service to Dallas, Fort Worth, and south to headquarters at San Antonio and Corpus Christi. The company plans to build well-equipped airports at each point on the lines to be operated.



View in one unit of the new plant of Fairchild Aviation Corp., Farmingdale, L. I., under design and construction by Austin.

# Designing and Building for Aviation

## How Austin Specialists Can Serve You

### Representative Austin Clients in the Aviation Industry

Boeing Airplane Company
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Stout Metal Airplane Company
U. S. Navy
U. S. Army
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The Pratt and Whitney Aircraft Company
Fairchild Aviation Corp.
Dungan-Smith Airways Inc.
Ohio National Guard
Gray Goose Air Lines, Inc.

A DECADE AGO, Austin Engineers began to serve the construction needs of the Aviation Industry in a large way.

Since that time, this organization has designed and built aircraft factories, hangars, wind tunnels, service buildings, and other airport facilities aggregating more than 2,000,000 square feet of floor space in 16 cities from Coast to Coast.

Many of the important developments in the design of aviation structures, including manufacturing plants, hangars, etc. have been made by Austin Engineers.

Their recommendations will be of value to corporations or municipalities contemplating new factories, airports, or any facilities in connection therewith.

Under the Austin Method of Undivided Responsibility, the complete project ~ design, construction and equipment ~ is handled by this one responsible organization. The contract guarantees in advance:

1. Low total cost for the complete project.
2. Completion date, with bonus and penalty clause if desired.
3. High quality of materials and workmanship throughout.

*Whatever type or size of project you may be interested in, it will pay you to get in touch with Austin. Approximate costs and other information will be furnished promptly. Wire, phone the nearest office, or mail the memo.*

**THE AUSTIN COMPANY** *Engineers and Builders* **Cleveland**

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*Memo to* THE AUSTIN COMPANY *Cleveland*— We are interested in a

.....project containing.....sq. ft. Send me a personal copy of

☐ "Austin Builds for Aviation."
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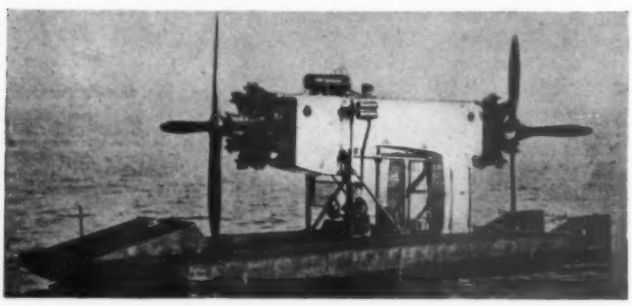
Firm.....City.....

A-6-4-28

## Novel Type Test Bed With Jupiter Engines In Tandem is Developed by the Dornier Co.

A NOVEL type of test bed has been developed by the Dornier Co. of Germany. As the engines on all the large Dornier flying boats are mounted in tandem in a nacelle above the upper wing, a similar nacelle has been built up and mounted on a hydroplane. The nacelle mounts two geared Jupiter engines with their accessories mounted similar to



*Testing Dornier Super-Wal Jupiter engine installation and gearing on the new test bed.*

those on the new Dornier Super-Wal. It is understood that the test bed has had over 100 hr. of running over the water at a speed of 75 m.p.h.

## Form the California Aerial Transport Co. For General Flying and Instruction Work

THE LATEST addition to Los Angeles flying organizations is the California Aerial Transport Co., located about seven miles west of town on Pico Boulevard.

Commercial flying and student instruction is now being carried on with an equipment of two OX-5 engined Travel Air biplanes. Soon after flying operations commenced, a third plane was needed and was flown to Los Angeles by H. C. Lippiatt of Clover Field, Southern California Travel Air distributor, who placed the plane in service at the Los Angeles field within 24 hr. and 50 min. after leaving the Wichita factory. A Whirlwind engined plane is to be acquired soon for advanced instruction.

Partners of the company are C. V. Dudrey, Laurence B. Talbot, and W. I. Oates. Pilots are F. H. Peters, Harry Gray Carley, and Lieut. Bud Hussey. Lieutenant Hussey is said to hold the tail spin record by having made 55 consecutive turns from an altitude of 14,500 ft. in 2 min. 50 sec.

Present hangar space accommodates five planes, a shop, and complete equipment for ground course.

## Department of Commerce Now Lists Total Of 1,075 Airports and 4,000 Landing Fields

THE DEPARTMENT of Commerce has now listed 1,075 airports in the United States, aside from 4,000 other fields on which planes can land. Some of these ports offer only landing facilities with gasoline and other supplies near at hand, but 231 ports are now equipped with the latest aeronautical aids for both day and night flying. Intermediate landing fields, along regular mail routes, marked and lighted by the Department of Commerce, now number 163. There are at present in operation, also, 78 fully equipped commercial fields. California, with 115 municipal and other airports leads all the states in providing accommodations for fliers. Pennsylvania, third in rank, with 68 fields, has 24 airports fully equipped by the Department—more, in this respect, than any other state. In addition, Pennsylvania has two ports equipped for night flying. Illinois, with 58 airports, of which 23 offer facilities for night landings, and Ohio and Oklahoma, each with 43 fields, follow next in order. Wyoming has the highest proportion of modernly equipped fields, 17 out of 21 in that state, offering all night service.

## Harry T. Booth Establishes Consulting Office at Roosevelt Field, Long Island

HARRY T. BOOTH, one of the best known aeronautical engineers, has announced the opening of a consulting office at Roosevelt Field, Westbury, Long Island. Mr. Booth is an old Curtiss designer, having joined that company in 1917. In 1921 he was in charge of the design of the Curtiss-Navy racer in which Bert Acosta won the second Pulitzer Race with the then record speed of 176.7 m.p.h., at Omaha.

In the fall of 1921, Booth and "Mike" Thurston joined forces under the name of the Bee Line Co. of Hammondsport, N. Y., where they built the BR racers for the Navy.

The following year Booth and Thurston were in charge of the design and construction of the Wright TX racers entered by the Navy in the 1923 Pulitzer race at St. Louis. These planes finished third and fourth in the race with speeds of 230 and 230.6 m.p.h.

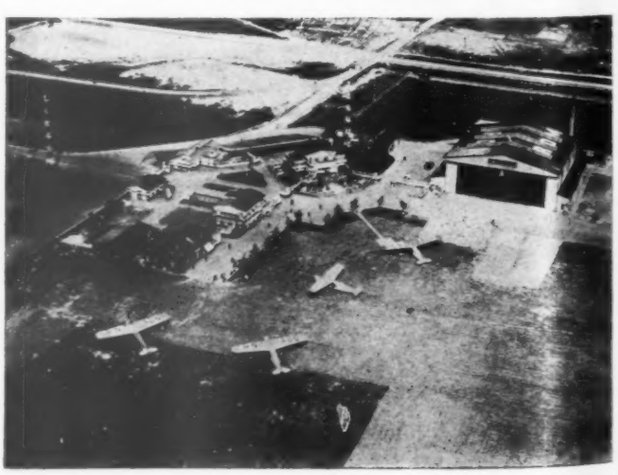
Following the 1923 Pulitzer Race Booth and Thurston joined Chas. Kirkham, where they designed and built the Vanderbilt flying boat and during 1927, A. J. (Al) Williams' racing seaplane.

## Wayco Air Service, Inc., of Detroit, Mich. Named Distributor of Bellanca Monoplanes

THE WAYCO Air Service, Inc., of Detroit, has been named distributor for Bellanca monoplanes in Michigan, Illinois, Northern Indiana, and Northern Ohio, Edward F. Schlee, president of the company, announced recently.

William S. Brock, co-pilot with Schlee on the flight of the Pride of Detroit, has been appointed general manager of distribution, Schlee said, and will shortly pilot the initial Bellanca monoplane here from the East after which distribution will begin.

## *Like a Model*



*So well equipped and laid out is the Waalhaven Airdrome at Rotterdam, Holland, that it presents the appearance of a model, as this photo shows, when it is viewed from the air. Hotel, office buildings, service stations, and aircraft companies make this airport one of the most up-to-date in Europe.*

# THIS IS THE DAY OF METAL

ALL the experience of the past points to the necessity of metal construction in vehicles for transportation. They must encounter strains and stress under extremes of weather and use, yet perform their work safely and economically.

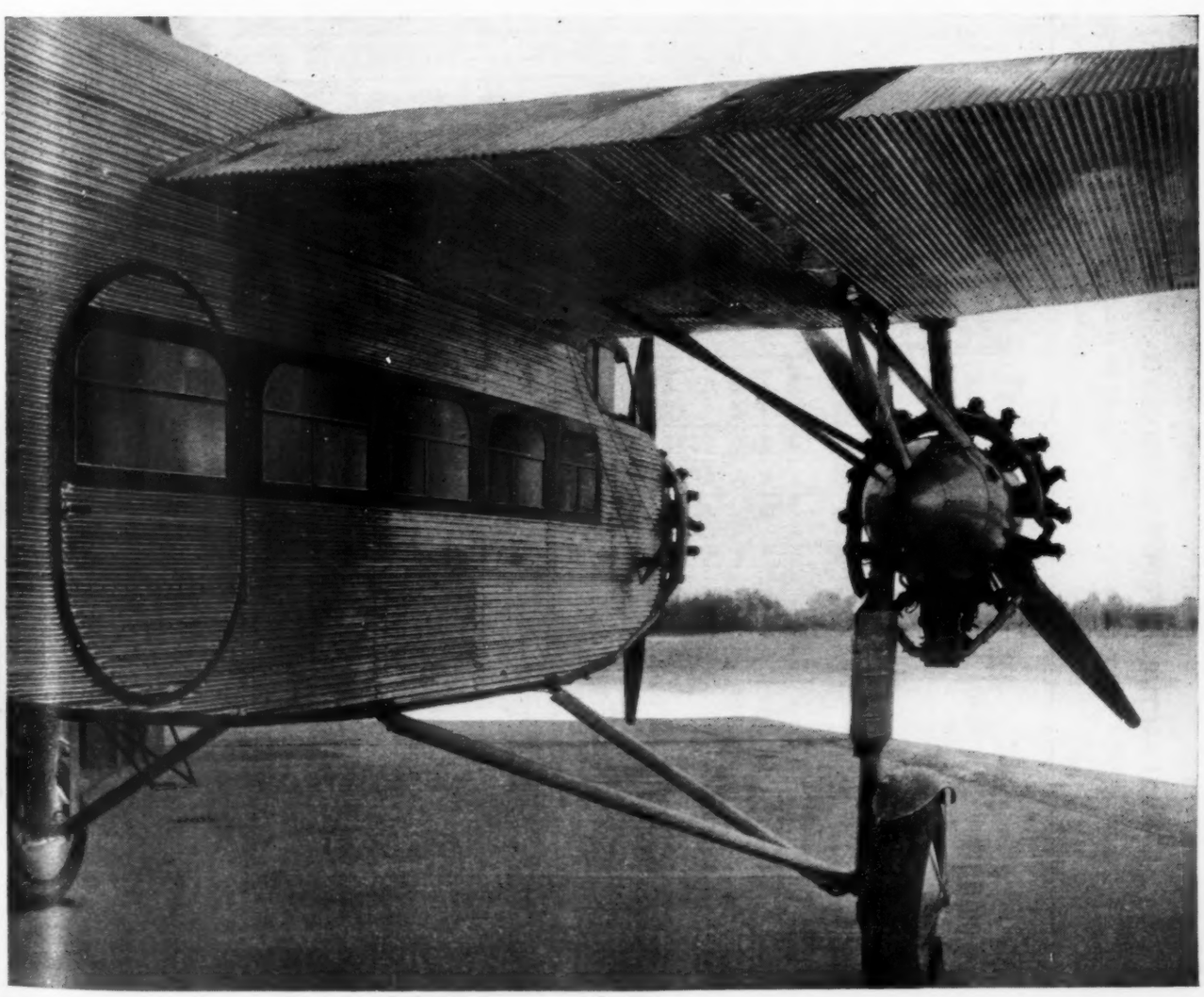
That is why the modern vessel is built of metal. The railroad car. The street car. The automobile body.

Each of these has a structure of metal and a covering of metal. Because economy and safety from structural weakness and the fire menace demand it.

The type of work the airplane does, and the conditions under which it operates, make the use of metal at least as necessary as in other vehicles.

It is gratifying to us to see the use of all-metal construction growing in this country. Not merely because it confirms our judgment in selecting metal over any other available material. But also because we believe it will further the cause of aviation by increasing the likelihood of safe operation and by permitting economies which will add to the prosperity of operators.

THE STOUT METAL AIRPLANE CO., *Division of* FORD MOTOR COMPANY, Dearborn, Mich.



# MANUFACTURERS' SPECIFICATIONS ON ENGINES AVAILABLE FOR COMMERCIAL USE AS COMPILED BY AVIATION

**THE TABLE BELOW IS BELIEVED TO BE ACCURATE BUT *AVIATION* DOES NOT ASSUME RESPONSIBILITY FOR THE FIGURES GIVEN**

This table will appear monthly and corrections and suggestions are invited

| MANUFACTURER OR AGENT | Engine | Cooling System | Cylinder Arrangement | No. of Cylinders | No. of Cycles | Propeller Drive | Rated Hp. and R.P.M. at Sea Level | Maximum Hp. and R.P.M. at Sea Level | Weight Dry Without Hub or Starter | Weight Per Rated Hp. | Bore and Stroke (In.) | Compression Ratio | B.M.E.P. | Displacement (Cu. in.) | Frontal Area (Sq. Ft.) | Diameter of Mounting Ring or Distance Between Bearers (In.) | Height or Overall Diameter (In.) | Length Without Starter (In.) | Guaranteed Fuel Consumption at Rated Hp. Lb./Hp./Hr. | Oil Consumption Lp./Hp./Hr. | Valve Mechanism | Cylinder Construction (See Key) | No. Intake Valves Per Cylinder | No. Exhaust Valves Per Cylinder | Make Spark Plugs Supplied With Engine | Type of Ignition | Make Ignition | No. Carburetors | Make Carburetors | Make Starter | Are Exhaust Manifolds Provided | Shipping Weight Crated | Dept. of Commerce License | Cost at Factory |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aircraft Engine Co. | Comet | A | Rad | 7 | 4 | D | 150-1800 | | | | 4½x5½ | | | | | | | | | | prr | Al, S | 1 | 1 | | 2M | Se | | Sy,E | Be | | | N | |
| Allison Engineering Co. | V1410 | A | IV-45° | 12 | 4 | D | 410-1800 | 430-1900 | 1000 | 2.44 | 4⅝x7 | 5.3 | 128 | 1410 | | 17 | 46¼ | 78½ | .55 | .03 | ohc | Al, S | 1 | 1 | BG | 2B | De | 1 | Sg² | E | | | Y | |
| Allison Engineering Co. | VG1410 | A | IV-45° | 12 | 4 | G¹ | 410-1800 | 430-1900 | 1125 | 2.62 | 4⅝x7 | 5.3 | 128 | 1410 | | 17 | | 85½ | .55 | .03 | ohc | Al, S | 1 | 1 | BG | 2B | De | 1 | Sg² | E | | | Y | |
| Allison Engineering Co. | V1650 | W | IV-45° | 12 | 4 | D | 420-1700 | 450-1800 | 885 | 2.10 | 5 x7 | 5.4 | 122 | 1650 | | 17 | 46½ | 74¼ | .53 | .025 | ohc | Al, S | 1 | 1 | BG | 2B | De | 1 | Sg² | E | | | Y | |
| Brownback Motor Laboratories, Inc.* | Anzani 3-35 | A | Rad | 3 | 4 | D | 35-1700 | 45-1800 | 115 | 3.29 | 3⅝x4¹³⁄₁₆ | 5.1 | | 119 | | 9.5 | 24¹³⁄₁₆ | 21 ¹⁹⁄₃₂ | .53 | .025 | prr | S | 1 | 1 | | 2M | AS | | Z | | Y | | Y | $731.50 |
| Brownback Motor Laboratories, Inc.* | Anzani 6-80 | A | Rad | 6 | 4 | D | 80-1500 | 80-1600 | 215 | 2.69 | 4⅛x4⅝ | 5.1 | | 397 | | 10.6 | 35¹³⁄₁₆ | 29 | .53 | .027 | prr | S | 1 | 1 | | 2M | AS | | Z | | Y | | Y | 1650.00 |
| Brownback Motor Laboratories, Inc.* | Anzani 10-120 | A | Rad | 10 | 4 | D | 120-1500 | 131-1600 | 320 | 2.67 | 4½x5½ | 5.5 | | 736 | | 11.0 | 43½ | 34¹¹⁄₃₂ | .60 | .031 | prr | S | 1 | 1 | | 2M | AS | | Z | | Y | | Y | 2167.50 |
| Curtiss Aeroplane & Motor Co. | OX-5 | W | V-90° | 8 | 4 | D | 90-1400 | | 375 | 4.17 | 4x5 | 4.9 | | 502 | | 12⅞ | | | .55 | .030 | prr | Mo, C | 1 | 1 | | 1M | | | Z | | N | | Y | |
| Curtiss Aeroplane & Motor Co. | OXX6 | W | V-90° | 8 | 4 | D | 110-1900 | | 490 | 3.55 | 4½x5 | 4.9 | | 568 | | 12⅞ | | | .55 | .030 | | Mo, C | 1 | 1 | | 2M | | | Z | | N | | Y | |
| Curtiss Aeroplane & Motor Co. | C-6A | W | L | 6 | 4 | D | 160-1700 | 165-1750 | 420 | 2.62 | 4½x6 | 5.2 | 133 | 573 | | 15¾ | | 57¹³⁄₃₂ | .52 | .015 | ohc | Al, Al, S | 2 | 2 | AC | 2M | Sp | 1 | Z | U | N | 865 | Y | |
| Curtiss Aeroplane & Motor Co. | D12 | W | V-60° | 12 | 4 | D | 435-2300 | 445-2300 | 680 | 1.47 | 4½x6 | 5.3 | 135 | 1145 | | 15¾ | | 56¾ | .52 | .015 | ohc | Al, Al, S | 2 | 2 | BG | 2M | Se | 2 | Sg | E | N | 1080 | Y | |
| Curtiss Aeroplane & Motor Co. | Conquerer V-1570 | W | V-60° | 12 | 4 | D | 600-2400 | 615-2400 | 760 | 1.26 | 5½x6¼ | 5.8 | 130 | 1569 | | 15¾ | | 56¾ | .52 | .015 | ohc | Al, Al, S | 2 | 2 | BG | 1M | Sp | 2 | Sg | E | N | 1040 | Y | |
| Curtiss Aeroplane & Motor Co., Inc. | Conquerer GV-1570 | W | V-60° | 12 | 4 | G³ | 600-2400 | 615-2400 | 840 | 1.40 | 5½x6¼ | 5.8 | 128 | 1569 | | 15¾ | | 56⅜ | .52 | .015 | ohc | Al, Al, S | 2 | 2 | BG | 1M | Sp | 2 | Sg | E | N | 1120 | Y | |
| Dayton Airplane Engine Co. | Bear | A | L | 4 | 4 | D | 110-1550 | 125-1800 | 375 | 3.41 | 4½x7 | 5.3 | 118 | 444 | | 16 | 38½ | 47⅝ | .505 | .0175 | ohc | Al, NI | 1 | 1 | | 2M | Sp | 1 | 2 | N | N | 550 | | $1600 |
| Fairchild Caminez Engine Corp. | Caminez 447-C | A | Rad | 4 | 4 | D | 135-1000 | 140-1050 | 350 | 2.50 | 5½x4½ | 5.0 | 120 | 447 | 3.9 | 21½ | 36 | 35 | .55 | .035 | prr | Al, S | 1 | 1 | AC | 2M | Se | 1 | Sg¹ | E | X | 775 | 1 | |
| Hallett Mfg. Co. | H-526 | A | Rad | 7 | 4 | D | 130-1800 | | 425 | 3.26 | 4⅜x5 | 5.2 | | 526 | | 18½ | 46 | 37 | | | prr | C | 1 | 1 | BG | 2M | Sp | 2 | Z | | N | | N | |
| Irwin Aircraft Co. | Meteormotor I79 | A | Rad | 4 | 2 | D | 20-1730 | 25-2200 | 65 | 3.25 | 2⅞x2⅝ | 5.0 | 110 | 79 | 2.0 | 8⅞ | 23 | 16 | .45 | .031 | N | Aa, Aa, S | 1 | 1 | RB | 1M | RB | 1 | Wf | | N | 100 | N | $625 |
| Kinner Airplane & Motor Corp. | K-5 | A | Rad | 5 | 4 | D | 100-1800 | | 231 | 2.30 | 4.25x.5.25 | 5.0 | | 372 | | 14 | | | | | prr | Al, Al, S | 1 | 1 | | 2M | Sc | 1 | Wf | | | | 3 | $1875 |
| Menasco Motors Co. | B-2 Salmson | A | Rad | 9 | 4 | D | 260-1500 | 278-1760 | 542 | 2.08 | 4.92x6.69 | 5.2 | | | | | 49½ | 38½ | .42 | .025 | prr | Al, S | 1 | 1 | | 2M | O | 1 | Z | | | | | $3,250 |
| Frank L. Odenbrelt, Inc. | Floco A-7-K | A | Rad | 7 | 4 | D | 150-1800 | | 430 | 2.87 | 4½x5½ | | | 612 | | | 45½ | 35 | | | | | | | | M | Se | 1 | Sg | | | 750 | N | |
| O.E.Szekely Corp. | SR-3 | A | Rad | 3 | 4 | D | 40-1800 | 45.6-1900 | 144 | 3.8 | 4½x4¾ | 4.8 | 100 | 191 | 2.3 | 9⅞ | | 23¾ | .57 | | p | C | 1 | 1 | | 2M | Se | 1 | Z | N | N | 205 | | |
| Packard Motor Car Co. | 1A-2775 | W | X.60° | 24 | 4 | D | 1200-2600 | 1300-2700 | 1500 | 1.15 | 5⅝x5.5 | 7 | 150 | 2775 | 6.22 | 14½ | 45¹³⁄₃₂ | 78¹⁵⁄₁₆ | .52 | .03 | ohc | S | 2 | 2 | BG | 4B | Se | 4 | Sg | O | N | | Y | 25,000 |
| Packard Motor Car Co. | 3A-1500 | W | V-60° | 12 | 4 | D | 600-2500 | 650-2700 | 760 | 1.26 | 5⅝x5½ | 5.5 | 140 | 1498 | 4.03 | 15¾ | 38¹⁵⁄₁₆ | 62½ | .52 | .015 | ohc | S | 2 | 2 | BG | 2M | Se | 2 | Sg | Ae | N | 1275 | Y | 12,000 |
| Packard Motor Car Co. | 3A-1500 | W | V-60° | 12 | 4 | G | 600-2500 | 650-2700 | 880 | 1.46 | 5⅝x5½ | 5.5 | 140 | 1498 | 4.03 | 15¾ | 38¹⁵⁄₁₆ | 65 | .52 | .025 | ohc | S | 2 | 2 | BG | 2B | De | 2 | Sg | Ae | N | 1390 | Y | 17,375 |
| Packard Motor Car Co. | 3A-1500 | W | V-60° | 12 | 4 | D | 600-2500 | 650-2700 | 780 | 1.30 | 5⅝x5½ | 5.5 | 140 | 1498 | 4.03 | 16¼ | 38⅝ | 62½ | .52 | .025 | ohc | S | 2 | 2 | BG | 2M | Se | 2 | Sg | Ae | N | 1275 | Y | 12,000 |
| Packard Motor Car Co. | 3A-2500 | W | VI-60° | 12 | 4 | D | 800-2000 | 835-2100 | 1160 | 1.45 | 6⅝x6½ | 5.7 | 135 | 2490 | 4.8 | 18¼ | 36⅛ | 69¾ | .52 | .015 | ohc | S | 2 | 2 | BG | 2M | Se | 2 | Sg | Ae | N | 2150 | Y | 15,625 |
| Packard Motor Car Co. | 3A-2500 | W | V-60° | 12 | 4 | G | 800-2000 | 835-2100 | 1380 | 1.72 | 6⅝x6½ | 5.7 | 135 | 2490 | 5.1 | 18¼ | 36⅛ | 76½ | .52 | .015 | ohc | S | 2 | 2 | BG | 2B | De | 2 | Sg | Ae | N | 2340 | Y | 19,375 |
| Pratt & Whitney Aircraft Co. | Wasp | A | Rad | 9 | 4 | D | 400-1900 | | 660 | 1.65 | 5⅝x5¾ | 5.0 | 124 | 1344 | | 23⅜ | | 43⅜ | .55 | .035 | prr | Al, S | 1 | 1 | BG | 2M | Se | 1 | Sg | | N | 1150 | Y | |
| Pratt & Whitney Aircraft Co. | Hornet | A | Rad | 9 | 4 | D | 500-1900 | | 750 | 1.5 | 6¼x6⅜ | 5.2 | 123.5 | 1690 | | 23⅜ | | 44⅝ | .55 | .035 | prr | Al, S | 1 | 1 | BG | 2M | Se | 1 | Sg | | N | 1325 | Y | |
| Quick Motors Co. | Quick-Radial | A | Rad | 9 | 4 | D | 125-1450 | | 325 | 2.6 | 4.13x5.51 | 5 | | 667 | | 19⅝ | 36 | 36 | | | prr | Al, S | 1 | 1 | CH | 1M | Se | 1 | Z | | | | | $1750 |
| Ryan Aeronautical Corp.* | Ryan-Siemens 5 | A | Rad | 5 | 4 | D | 70-1750 | 75-1850 | 258 | 3.68 | 3.94x4.72 | 5.6 | 110.5 | 287 | | 14 | | 40½ | .50 | .022 | prr | Al, S | 1 | 1 | O | 2M | O | 1 | Sm | RB | Y | 630 | Y | 1,800 |
| Ryan Aeronautical Corp.* | Ryan-Siemens 7 | A | Rad | 7 | 4 | D | 96-1750 | 102-1850 | 328 | 3.40 | 3.94x4.72 | 5.6 | 108.0 | 402 | | 14 | | 40½ | .50 | .022 | prr | Al, S | 1 | 1 | O | 2M | O | 2 | Sm | RB | Y | 675 | Y | 2,340 |
| Ryan Aeronautical Corp.* | Ryan-Siemens 9 | A | Rad | 9 | 4 | D | 125-1750 | 132-1850 | 382 | 3.05 | 3.94x4.72 | 5.6 | 109.5 | 517 | | 14.6 | 40½ | 32 | .50 | .022 | prr | Al, S | 1 | 1 | O | 2M | O | 2 | Sm | RB | Y | 720 | Y | 2,970 |
| Tips & Smith, Inc.† | Super-Rhone | A | Rad | 9 | 4 | D | 125-1450 | 133-1650 | 15 | 2.52 | 4½x5½ | 5.2 | | 667 | 4.75 | 11 | | 39 | .31 | .036 | prr | -, S, C | 1 | 1 | Sp | 1M | Dx | 1 | Z | | | 400 | N | |
| Velie Motors Corp. | Velie M5 | A | Rad | 5 | 4 | D | 70-1800 | 80-2000 | 210 | 2.63 | 4⅛x3¾ | 5.2 | | 2506 | | 12¾ | 32 | 27 | .55 | .025 | prr | Al, S | 1 | 1 | AC | 2M | Sc | 1 | Z | X | E | Y | | |
| Warner Aircraft Corp. | Scarab | A | Rad | 7 | 4 | D | 110-1850 | 120-1925 | 270 | 2.45 | 4¼x4¼ | 5.2 | 112 | 422 | | 17 | 35½ | 27½ | .50 | .01 | prr | Al, S | 1 | 1 | AC | 2M | Sc | 1 | Sg | | N | | 2 | $2,245 |
| Wright Aeronautical Corp. | Whirlwind J5 | A | Rad | 9 | 4 | D | 200-1800 | 225-2000 | 500 | 2.50 | 4½x5½ | 5.2 | 123 | 788 | | 19¼ | 45 | 33¾ | .60 | .025 | prr | Al, S | 1 | 1 | AC | 2M | Sc | | Sg | | | 100 | Y | 4,980 |
| Wright Aeronautical Corp. | Cyclone R1750 | A | Rad | 9 | 4 | D | 525-1900 | | 760 | 1.52 | 6x6⅞ | | 130 | 1753 | | 25¾ | 53⅜ | 40⅝ | .55 | .035 | qrr | Al, S | 1 | 1 | BG | 2M | Sc | 1 | Sg | | | 1530 | Y | |
| Wright Aeronautical Corp. | Hispano Suiza E | W | V-90° | 8 | 4 | D | 200-2200 | | 480 | 2.4 | 4¾x5½ | 4.7 | 105.5 | 718 | | | | | .48 | .038 | ohc | S | 1 | 1 | | 2M | | 1 | Sg | | N | | Y | |

*—Engines of foreign manufacture
†—rebuilt
a—applied for
A—Air cooled
Aa—Aluminum alloy
Ae—Aeromarine
Al—Aluminum
AS—Anzani or Scintilla
B—Battery ignition
Be—Scintilla booster magneto

C—Cast iron
Ch—Champion
Cylinder Construction
first—head
second—walls or waterjacket
third—sleeve, if any
D—Direct
De—Delco
Dx—Dixie
E—Eclipse

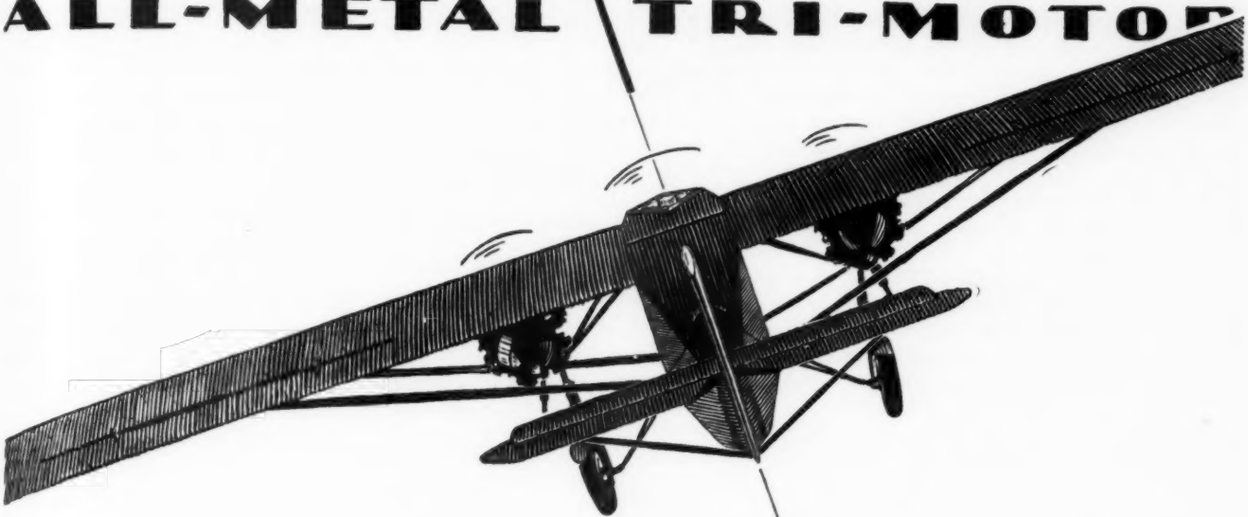
E—Ensign
G—Geared
G¹—5:3 epicyclic gear
G²—2:1 reduction gear
G.E.—General Electric
I—Inverted
L—Cylinders in line
Mo—Monel
M—Magneto
NI—Nickle Iron

N—No
O—Own
ohc—Overhead cam
prr—Push rods and rocker arms
Rad—Radial
RB—Robert Bosch
Sc—Scintilla
Sg—Stromberg
Sg¹—Stromberg NA-U5 duplex
Sg²—Stromberg NAS-8E

Sm—Sum
Sp—Splitdorf
S—Steel
U—U.S.L. Electric
V—Vee
W—Water cooled
Wf—Winfield
X—Extra
Y—Yes
Z—Zenith

# PRUDDEN

## ALL-METAL TRI-MOTOR



## ECONOMY IN AIR TRANSPORTATION

Comparisons show the Prudden *Tri*-Motor All-Metal plane operates as economically per passenger mile flown as any *single* engined air transport. All-metal construction practically eliminates depreciation, upkeep and repairs. And there is also the insurance provided by three engine power. Write for *Comparative Cost Estimate* on your proposed line. We have an attractive Distributor proposition. *8-Place ... Dual Control ... $25,000 Flyaway*

**PRUDDEN-SAN DIEGO AIRPLANE COMPANY**
**SAN DIEGO, CALIF.**

AM 7

THANK YOU *for mentioning* AVIATION

## New 140 Acre Airport is Completed Near St. Louis by the Parks Airlines Company

RAPID DEVELOPMENT of Parks Airlines, Inc., and Parks Air College is facilitated by the completion of their new airport, only 20 min. by automobile from downtown St. Louis. It is on the Illinois side of the Mississippi River, easily accessible by auto or train.

The field has been developed under the direction of Oliver Parks, vice president of Parks Airlines, Inc., and H. P. Mammen, president. Derek White is dean of the college. He was formerly general manager of the Marshall Flying School, Marshall, Mo. Cooperation was obtained from the East St. Louis Chamber of Commerce and East St. Louis merchants and business men.

The field is located five miles due south of the center of St. Louis, east side of river, just off State Highway No. 3. The field comprises about 140 acres of flat ground with natural drainage. About 300 additional acres are under option by the owners. The parking space adjoining the field accommodates 1500 automobiles.

During the past several weeks seven buildings have been completed, including the administration building and general

*Parks Air College Travel Airs lined up at Parks Airport, St. Louis.*

offices, class rooms for students, fully equipped tool shop, a restaurant, a hangar with capacity of 16 planes, another hangar 35 x 75 ft. in size, and a students' dormitory. Over $65,000 has been spent for equipment alone, not including the cost of the field. Two dormitories, each for 60 students, and two more hangars, are now under construction.

A gasoline storage tank with a capacity of 10,000 gal. has been installed near the tracks of the Columbia, Waterloo, and East St. Louis Railway, adjacent to the field, with a pipe line to the head of the runway where the planes are serviced.

The first of three hard surfaced runways, 40 ft. by 2700 ft., designed to accommodate the largest freight and passenger planes, is finished. Boundary lights are being installed. By June 1 the field will be completely equipped for night flying with flood lights, obstacle lights, and beacons. The Parks Air College now has 145 students. New students are being admitted as facilities are available.

### White and Brayton Direct School

The flying school is under the direction of Derek White, dean of the college, and Clyde E. Brayton, licensed transport pilot who is chief instructor and field manager. He established a world record in 1927 with 904 hr. flying time during the 12 months. Claude Sterling, first assistant instructor, was formerly for three years chief instructor at Marshall Flying School, Marshall, Mo. Six other flying instructors are retained in addition to mechanics, classroom and ground instructors.

The equipment at the field includes 15 new OX-5 Travel Airs in addition to two newly-ordered Whirlwind Travel Airs, a Caminez Travel Air, and a new Model 6000 Travel Air Transport monoplane, which seats six and has dual control, powered with a Whirlwind engine.

## Not For Sale

SINCE THE publishing of the announcement of the Wacopoupe Aeronaughtical Engineering Corp., manufacturer of the Travelrock monoplane, in the May 14 issue of AVIATION (page 1413) we have received several inquiries for additional data regarding this unusual plane. It is hoped that this information will soon be forthcoming, but in the meantime, for the benefit of those that made such a query, the Wacopoupe Company has asked us to announce that it will under no circumstances sell one of its planes for use on any long trans-oceanic flight.

## German Glider Experts Will Open Detroit Air-Olympics With Engineless Craft Flights

THE FIRST official public demonstration of gliders in America will be the opening feature of the Detroit Air-Olympics, the name chosen to cover the fourth annual National Air Tour, the Gordon Bennett International Balloon Race, and the Boys' National Model Airplane Contest. The Air-Olympics are to be held in Detroit June 30.

The demonstration will be staged by Peter Hesselbach, Dr. Paul Laubenthal, and Capt. Paul Roehre, German gliding experts, who are in America to exhibit their engineless craft in action. Although the German trio has been in the United States for several weeks they will withhold their first public exhibition until June 30, in accordance with a contract signed with the Aircraft Events Committee of the Detroit Board of Commerce, sponsors of the Air-Olympics. Announcement of the acquisition of the German experts as one of the four major features on the day's program was made by Karl Betts, assistant manager of the aircraft events for the board.

Six gliders, brought to America from Germany, will be brought to Detroit by the trio for exhibition. One of these machines built by Ferdinand Schulz, another German gliding expert, is the craft in which Schulz soared to a world record of 14 hr. and 25 min.

### Planes Will Tow Them into Action

Early on the morning of the Air-Olympics, prior to the start of the tour, according to present plans, the gliders, towed by airplanes, will take off. At an altitude of approximately 2,000 ft. the pilot of the glider will pull a lever, releasing the tow-rope and consigning the engineless aircraft to his skill.

All three of the Germans came to America at the invitation of J. C. Penney, Jr., and the American Motorless Aviation Club, Betts said. One of them, Hesselbach, is holder of the world's record for gliding with a passenger. The record, 5 hr. and 50 min., was set last summer in the crimea.

Shortly after the close of the Detroit Air-Olympics the Germans, it is understood, will attempt to set a new world record somewhere in the vicinity of Detroit. Germany, incidentally, now has more than 100 gliding and soaring clubs, with a total membership of more than 20,000.

As an added feature of the gliding division of the program aeronautical students of Detroit's Cass Technical High School will demonstrate the "Kasstek", a glider they built themselves. This demonstration will be made under the direction of Harry Karchner and A. D. Althouse of the Cass Technical High School faculty.

The Kasstek weighs but 40 lb. It is of biplane construction with a 20 ft. wing spread. The wings are slightly more than four feet wide and the fuselage is 15 ft. long. It cost but $25 to build, it is said.

*Announcing . . . . .*

# BLACK & BIGELOW, INC.

## *Air Transport Engineers*

AN organization of specialists experienced in the various angles of air transport and aircraft operations. *More than a firm of consulting engineers,* — its activities include also traffic development, organization of flying operations, accounting and advertising.

Among the stockholders are included leaders in aviation as well as representative men from banking and other fields of business, making it an independent and unbiased organization.

*Equipped to undertake:* Surveys of projected air routes . . . Surveys and analyses of air traffic . . . Estimates of investment for aircraft operations . . . Estimates of aircraft operating cost . . . Selection of flying and base equipment . . . Complete organization of flying operations . . . Selection and inspection of operating bases . . . Inspection and appraisal of airplanes, engines and equipment . . . Certification of performance of airplanes and engines . . . Adaption of airplane design to operating requirements . . . Installation of accounting and cost systems . . . Planning and supervision of advertising and business development.

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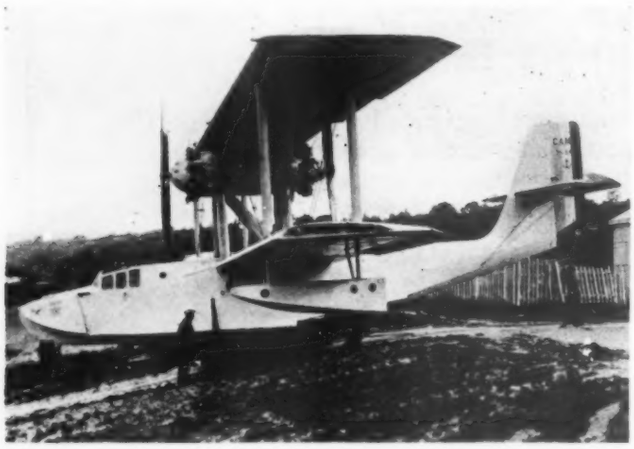
***Cable Address: BLAKLOW, N. Y.*** ***Telephone: Vanderbilt 7616***

## Lieutenant Paris Preparing Twin-Engined Flying Boat for a Flight Across the Atlantic

A TRANS-ATLANTIC expedition using a C.A.M.S. 54, twin-engined, biplane flying boat is completing its preparations in Marseilles, France, and expects to take off for the United States very shortly. The plane to be used is a long range military reconnaissance and bombing type converted for a long overseas flight. The crew is composed of Lieutenant Paris of the French Navy, who is in command of the plane, Chief Petty Officer Marrot, who will act as second pilot, and Petty Officer Cadou who will act as radio man.

It is understood that two similar planes are being prepared so that in case of any trouble the second plane will be ready. According to recent reports the two air cooled, Gnome et



*Twin-engined C.A.M.S. 54 flying boat in which Lieutenant Paris and his crew plan to cross the Atlantic from France.*

Rhone 380 hp. Jupiter engines have been replaced by two water cooled 500 hp. Hispano-Suiza engines. The engines are arranged in tandem above the hull and between the wings. They are both mounted in a single nacelle, streamline in shape and housing two oil tanks, fire extinguishers, and fuel pumps. The nacelle is accessible in flight and, for repair or reconditioning, the entire power plant is removable as a unit. The central portion consists of a system of longerons and cross members supported between the wings to the wing spars and to the fuselage bulkheads. To this central portion the steel tube engine mounts are attached.

Though no detailed information is available at this time, it is assumed that it is similar in construction to the military model. The hull is of two step design but, unlike the other planes, it has a closed cabin for the pilots. The hull has a concave V bottom with flat sides and rounded deck. Behind the steps the hull section gradually becomes elliptical. It is built up of a number of transverse frames of ash with poplar longitudinals. Two layers of teak and one of plywood are used for the bottom covering while the sides, up to the water line, are covered with one layer of teak and one of plywood. Above the water line only plywood is used, except for the front deck and rear portion of the hull, which includes the fin, of moulded tulip wood. The wings are of wood construction of single bay design. The upper wing is built in three panels, the center section and the two outer panels. The lower wing consists of two panels, each mounted to the wing stubs and built integral with the sides of the hull. By the use of two jury struts the wings may be folded in approximately 10 min. The tail surfaces are wire braced; the fin is of wood construction built integral with the hull. The stabilizer is of wood construction covered with plywood while the elevator and rudder are of steel tube construction covered with fabric.

The general specifications of the military type are as follows:

| | |
|---|---|
| Length | 45 ft. |
| Span | 67 ft. |
| Height | 16.4 ft. |
| Area | 1,239 sq. ft. |
| Weight empty | 9,030 lb. |
| Normal disposable load | 5,330 lb. |
| Normal gross load | 14,360 lb. |
| Rated power | 1000 hp. |
| Wing loading | 11.6 lb. per sq. ft. |
| Power loading | 14.36 lb per hp. |
| High speed, normal load | 143 m.p.h. |
| High speed, trans-Atlantic load | 130 m.p.h. |
| Cruising speed | 103 m.p.h. |
| Landing speed | 62 m.p.h. |
| Normal range | 621 mi. |
| Ceiling | 17,390 ft. |

## Black and Bigelow, Inc., New York Offer Aero Engineering and Business Services

ARCHIBALD BLACK and Anson A. Bigelow, who for some time have been at work forming a new organization to render engineering and business services to aircraft operators and manufacturers, now announce the formal opening of the offices of Black and Bigelow, Inc., at 551 Fifth Ave., New York City.

*Archibald Black, president of new aero service company.*

Archibald Black is president and general manager of the new firm, Anson A. Bigelow is vice president, George M. Pynchon, Jr., (Pynchon & Company) treasurer and J. Harlin O'Connell (Smyth, Wise & O'Connell) is secretary. In addition to these men, the board of directors also includes: Benjamin F. Castle, (vice president 1st Federal Foreign Investment Trust), Charles H. Colvin, (president Pioneer Instrument Co.), Sherman M. Fairchild, (president Fairchild Aviation Corp.), C. T. Ludington (president Ludington Philadelphia Flying Service and second vice president National Air Transport, Inc.), William A. Rockefeller (director, Colonial Air Transport Corp., etc), and Lorillard Spencer (president, Fokker Aircraft Corp. of America). Those associated with the company include Prof. Alexander Klemin (Aerodynamics and Airplane Design); Raymond A. Lipscomb, vice president, Hazard Advertising Corp.; J. Harlin O'Connell (Attorney); and Philip H. Caine (Accounting).

Not only engineering, but also traffic development, organization of flying operations, accounting, and advertising will be among the services offered by the new company. The organization includes a group of specialists, each with an established reputation in his particular activity.

# for every Commercial Purpose~ over Land and Sea

*The air is the great highway accessible to all places, but the airplane can only be considered to have really attained its dominating career when it is endowed with ability to land and operate from both land and water. "For every commercial purpose—over land and sea," identifies the Loening Cabin Amphibian and its use makes possible the inauguration of a more practical era of flying. An attractive, illustrated booklet, containing complete information, will be mailed to you upon request.*

Pioneers in aircraft development, Loening Aeronautical engineers have concentrated for more than a decade on a single purpose. Today, because of this highly skilled specialization, the Loening Cabin Amphibian embodies proven principles that place it far in the vanguard of commercial plane development. Proven under all conditions by more than a hundred ships which have flown more than two and one-half million miles in Government service, the Loening Amphibian is now available for commercial use in cabin form. Its extreme versatility, due to its equal operating efficiency from both land and water, more than doubles the scope of usefulness and greatly reduces the restrictions which govern the usual airplane operation. Delivered for flight, New York, fully equipped and perfectly appointed, $26,700.

The LOENING Cabin Amphibian

Powered with 410 h. p. Pratt & Whitney "Wasp" Engine

LOENING AERONAUTICAL ENGINEERING CORPORATION

Thirty-first Street *and* East River

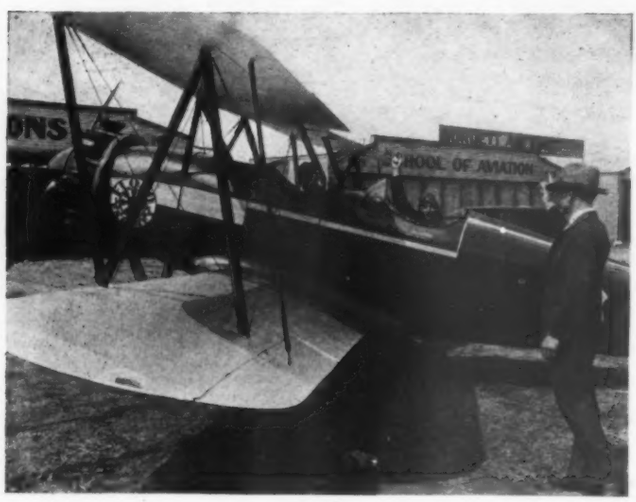
New York City

## Alexander Company Orders 1,000 Floco Engines from Frank L. Odenbreit, Inc.

AN ORDER for 1,000 airplane engines, involving total expenditures of $2,750,000 has just been received from the Alexander Eaglerock Co. of Colorado Springs, according to Frank L. Odenbreit, Floco engine manufacturer, Los Angeles, Calif.

This is said to be the largest single business transaction involving the sale of airplane equipment, in the history of commercial aviation. The contract signed calls for a minimum delivery of 50 engines per month, the first shipment to be accomplished by the beginning of June.

Prior to obtaining this order, Thomas M. Hardesty, director of sales, T. C. Alexander, chief test pilot, and W. M. Patch, special Floco representative, made a fast flight from Los Angeles to Colorado Springs in the Floco demonstration plane and there put the engine through an exacting series of block and flight tests for J. Don Alexander, and engineers of the Eaglerock company. The round trip flight was made with a total flying time of 26 hr. and 45 min. over a 2600 mi. route and through varied adverse weather conditions.



*Frank L. Odenbreit, Floco company president, beside the demonstration plane in which are seated Thomas Hardesty, sales director, (left) and T. C. Alexander, chief test pilot.*

The Floco corporation has installed more than $100,000 worth of additional equipment, giving the plant a production of 100 engines per month by July 1, Mr. Odenbreit stated, in order that prompt delivery of these engines may be made to other aircraft manufacturers.

## Captain Carranza Flies Non-Stop in Ryan Airplane from San Diego to Mexico City

IN A non-stop flight of 1,575 mi., Capt. Emilio Carranza flew from Camp Kearny, San Diego, Calif., to Valbuena Aviation Field, Mexico City, May 24-25. The 20 yr. old Mexican pilot is being hailed by his countrymen as a national figure following his spectacular 18 hr. 20 min. flight. He used a Ryan plane similar to the Spirit of St. Louis except for a slightly smaller gasoline capacity.

Captain Carranza flew his plane, the "Mexico Excelsior," along the Gulf of California, passing over Guaymas. From Mazatlan he flew to Guadalajara and from the latter point to Mexico City. He carried a total of 265 gal. of fuel on the flight, with 140 gal. in the wing tanks and 125 gal. in the fuselage container.

Captain Carranza now plans to fly from Mexico City to Washington, D. C., as a Mexican good will flight returning the courtesy of Colonel Lindbergh's Washington-Mexico City non-stop journey of last December.

## DH Moths and DH Engines to be Produced In America by New Delaware Corporation

QUANTITY PRODUCTION in the United States of the De Havilland Moth has been announced by the Moth Aircraft Corp., which has been incorporated in Delaware with a capital of $500,000. Rights to manufacture not only the De Havilland Moth but also the four-cylinder-in-line air cooled DH engine have been obtained by the company. This engine develops 132 hp.

The first American built Moth is to be completed early in August, according to plans. A number of engines will be imported from England in order to hasten production. The DH Moth biplane is holder of a number of records for both distance and speed.

Earl L. House is business manager of the new concern, J. Edwin Morrow is factory manager in charge of production, and Kenneth R. Unger is in charge of sales. Horace H. Work, 535 Fifth Ave., New York, is chairman of the board of directors of the company. Joseph Smith of New York City will serve on the board. House, Morrow, and Unger will also act as directors.

### Morrow a Pioneer

During the World War, Morrow was vice president of the Willys-Morrow Co., which, it is said, built more than 7,000 OX-5 engines for the Government. He was also one of the pioneers who, with Glenn H. Curtiss, Alexander Graham Bell, and Lieutenant Selfridge, made aeronautical experiments at Hammondsport, N. Y. Morrow was recently factory manager of the Atlantic Aircraft Corp. of Hasbrouck Heights, N. J. Unger is a veteran mail pilot and Royal Air Force flier. House also saw air service during the war.

## Dirigible Italia Bearing General Nobile and Crew Reported Lost After Flight to Pole

AS WE go to press, General Nobile and his crew are reported lost in the Arctic wastes following a flight over the North Pole. The dirigible Italia, scheduled to return to its base at Spitzbergen, is many days late; and only garbled radio messages signifying disaster have been received from the Italian expedition. Latest reports indicate that the airship has drifted toward Siberia.

General Nobile made his trip to the Pole on May 23 following a flight to Lenin Land. Messages from the Italia stated that the ship attained and circled the North Pole for two hours and then the next midnight headed south for the return flight. Reports on May 24 of steady flight south, however, were shortly followed by silence. Various plans of a rescue attempt are now being considered, the base ship *Citta Di Milano* already having started north. It is estimated that the Italia is capable of remaining aloft for a period of two weeks.

### Seven Were in Norge Flight

Capt. Roald Amundsen, who was accompanied by General Nobile in the flight of the dirigible Norge over the North Pole in 1926, and Capt. George H. Wilkins and Lieut. Carl B. Eielson, who recently flew in their Lockheed Vega plane from Point Barrow, Alaska, to Spitzbergen, are among those planning rescue attempts. There are 18 men aboard the Italia, it is reported, seven of whom were in the Norge flight.

# MAHONEY

*B. F. Mahoney and Col. Chas. A. Lindbergh standing by new Ryan Brougham recently delivered to Col. Lindbergh*

## *on Land or Water*

THIS BROUGHAM is destined to dominate the Whirlwind cabin monoplane field. ¶ As a *sea* plane, equipped with Edo Pontoons, take-off with five people and 67 gallons of gasoline has been made in 18 seconds. ¶ As a *land* plane, with five people and 83 gallons of gasoline, it has taken off in 8 seconds. ¶ Performance—where performance is most needed, maneuverability, stamina, unusual appointments, exceptional workmanship, and the application of sound, basic engineering maintain the Mahoney Brougham in a class by itself—at a price that will interest you!

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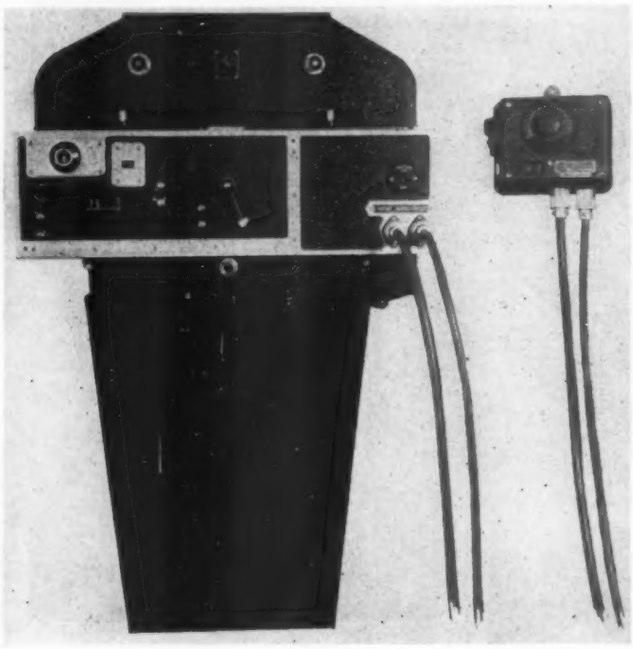
*San Diego* *St. Louis*

THANK YOU *for mentioning* AVIATION

## Special Aerial Camera for High Altitude Work is Built by the Fairchild Company

THE WORLD'S largest aerial camera, specially designed and built for operation at high altitudes has just been completed at New York City, by the Fairchild Aerial Camera Corp., in cooperation with the Aerial Photographic Experimental Section of the Army Air Corps of Wright Field, Dayton, O. It will soon undergo its first trial test at a Long Island field.

According to Sherman Fairchild, president of the Fairchild companies, the new camera has been designed to operate 30,000 ft. or more. It is said that this new automatic



*The new Fairchild camera and control device.*

aerial camera can operate at altitudes greater than any present day plane can attain. The tests to be made will mark the end of two years' experimental and development work applied to the project.

The designing and building of this new aerial camera was undertaken by the Fairchild Aerial Camera Corp. at the request of the U. S. Air Service; an automatic camera was wanted which would operate at altitudes beyond the reach of anti-aireraft guns.

This new automatic camera is the only one of its kind in existence, and is said to be not only the largest, but one of the most efficient. Its actual size is 48″ x 30″ x 20″.

Many unique features have been incorporated in the construction and design, among the more important being the following:

1. An electrical heating system for preventing the shutter from freezing at temperatures as low as 60 deg. below zero (Fahrenheit).

2. Complete automatic control and operation, with a 36″ focal length lens, having an F 4.5 aperture.

3. Incorporation of a device which records on each picture the time of day at which it was taken in hours, minutes, and seconds, the altitude, the degree of tilt of each exposure, the number of the exposure, and any other pertinent data which the observer might wish. All this information is recorded on a sheet smaller in size than an ordinary visiting card.

4. An automatic timing device is also part of the equipment whereby the exposures are automatically controlled at whatever specified interval is desired by the photographer.

5. Special filters are provided for penetration of atmospheric hazes.

The new aerial camera will make an exposure 9″ x 18″ in size, the largest ever developed. Hitherto the size of exposure made by the largest aerial camera has only been 7″ x 9″. As to its range and adaptability, Fairchild estimated that a plane equipped with this new camera and flying, for example, at a height of 30,000 ft., will be enabled to photograph in a single exposure an area over four square miles in extent in large detail. The magazine of this camera will carry enough film for 100 separate exposures without reloading.

Upon completion of the tests at New York, the camera will be sent to Dayton, O., where it will be installed in an Army plane for extensive experimental photographic work.

## St. Tammany Company is Lowest Bidder For New Orleans-Border Mail Transport

THE ST. Tammany Gulf Coast Airways, Inc., of New Orleans, La., was the lowest bidder on the proposed air mail route from New Orleans, via Houston, Tex., to San Antonio, Brownsville, or Laredo on the Mexican border, bids for which were recently opened at the Post Office Department. This firm agrees to carry the mails over this route for $1 per lb.

Other bidders on this route were: Western Air Express, Los Angeles, $1.95 per lb.; Texas Aero Corp., Temple, Tex., $2.25 per lb.; Heywood Nelms, Houston, Tex., $3.00 per lb.; Walter T. Varney, Wilmington, Del., $1.33 per lb.; and Prater Airlines, Pittsburgh, $2.68.

Bids were also opened on the three foreign routes now operated, the contracts on which expire July 1, 1928. The following bids were received on the route from Seattle, Wash., to Victoria, B. C.: Boeing Air Transport, Seattle, $144.50 per round trip; Northwest Air Service, Inc., Seattle, $150 per round trip; P. F. Barnes, and Berne C. Gorst, Seattle, $142.50 per round trip.

Key West to Havana: B. K. White, Brooksville, Fla., $1.00 per lb.; Pan-American Airways, Inc., New York City, $2.00 per mile.

New Orleans to Pilottown, La.: Arthur E. Cambas, New Orleans, $75.00 per round trip; Menefee Airways, Inc., New Orleans, $85.00 per round trip.

## Two World Seaplane Load Carrying Marks Are Shattered by Navy Pilots Flying PN-12

TWO MORE world seaplane records have been broken with the Navy PN-12 plane in which Lieutenants Gavin and Soucek recently set a new mark of 36 hr. 1 min. 14 sec. in flight duration. Lieut. Zeus Soucek with Lieut. Lisle J. Maxson as co-pilot and George Proley, mechanic, formed the crew of the plane in these new record flights.

With a load of 2,240 lb. dead weight, the plane broke the former full pay load duration record for seaplanes when it remained in the air 17 hr. 55 min. 13.6 sec., May 25-26 at Philadelphia. The former mark was but 11 hr. 7 min. 18 sec. and was set by the PN-10 in 1927 by Lieut. B. J. Connell of the Navy.

The second mark to be surpassed was for distance covered with wartime load. The PN-12, in its flight, traveled 1,242.75 mi., it was estimated, thus beating the record of 994 mi. set by Richard Wagner and George Zinsmaier in a Dornier plane on Aug. 8, 1927 at Altenheim, Switzerland.

Better marks might have been set, it is said, had it not been for the fog, winds, and rains which were encountered. Meeting the conditions, the PN-12 was brought down, though 300 gal. of fuel were still left in her tanks—enough to have covered an additional 500 mi.

# A BOOKLET--*free!*

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***A Real Eye-opener!***

## *To* EXECUTIVES OF THE AIRCRAFT INDUSTRY

HERE'S A compact little booklet containing important charts, statistics, data and information every present and prospective manufacturer of airplanes, motors and accessories should possess. This booklet shows . . . . how large investments in expensive plant locations and buildings can be eliminated . . . . how aircraft production costs can be reduced . . . . how plant and labor efficiency can be improved . . . . how peak production schedules, tests and all other activities can be conducted throughout the *entire year* without interruption from snow, sleet, serious fog, rain, freezing temperature, extreme heat or electrical storms . . . . what the U. S. Govt. found in a nation-wide investigation covering sites for an aviation training school . . . . Etc. etc.

Included in this booklet is a brief description of Lindbergh Field—San Diego's $650,000.00 new municipal airport, now under construction. When completed, this Triple-A airport will be one of the finest in the world, and space on this field is being provided for airplane factories at unusually attractive rates. *Inquiries Solicited.* For the booklet and other information write to the Industrial Development Department, 796 Chamber of Commerce Bldg., San Diego, Calif.

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*Dedication of Lindbergh Field—with the greatest aerial exhibition in the history of Aviation. More than 400 U. S. Army, Navy and Marine Corps ships in the air at one time!*
*Excursion rates to San Diego on all railroads. You are invited.*

# Last Minute Briefs

The new Curtiss Robin plane has been awarded approved type certificate No. 40, according to an announcement from C. L. Ofenstein of the Department of Commerce.

A 40 acre flying field is being established at Kankakee, Ill., by the Wilson-Koerner Aviation Co. of Kempton, Ill. The field is square and free of obstructions.

Letters inviting delegates to the Detroit Air-Olympics have been mailed by the Detroit Board of Commerce to 1,800 boards of commerce throughout the country.

John J. Enright, veteran of 37 yr. post office service, has been appointed assistant superintendent in charge of air mail in the Chicago office.

The Twin Falls Aircraft Co. of Twin Falls, Idaho, composed of R. J. Boyce, E. E. Istrander, and L. H. Walden, has become Eaglerock plane distributor in Southern Idaho.

B. Russell Shaw Co., Inc., St. Louis airport engineering company, has been named to provide an up-to-date airport at Zanesville, O.

Postmaster General New announces that, effective July 10, the overnight New York-Chicago mail service will be extended to include Cedar Rapids, Ia., Des Moines, Ia., Omaha, Neb., and Lincoln, Neb.

Max Berghammer and Herman Dickof have formed the Marshfield Aerial Service Co. at Marshfield, Wis. They are negotiating for an 80 acre flying field and have already ordered a six plane steel hangar.

Said to be the first woman in America to own and operate an aircraft company, Mrs. C. E. Steele manages the Steele Airlines, Inc., Omaha, Neb., Eastern Nebraska and Western Kansas Eaglerock distributor.

The westward trans-Atlantic fliers, Captain Koehl, Baron von Huenefeld, and Major Fitzmaurice, have returned to New York city, their tour completed. It is reported that they will sail for home on June 9.

A new plant is being opened near Glendale, W. Va., by the Fokker Aircraft Corp. About 100,000 sq. ft. of floor space is available at the new factory, which has been leased to fill an overflow of plane orders.

Maj. C. A. Lutz, who recently won the Curtiss Marine Trophy Race, has received Navy Department orders to fly a Fokker transport plane to the Marine Corps base in Nicaragua. The date of the flight is as yet undecided.

Colonel Lindbergh left Curtiss Field, L. I., May 29 on the first leg of a trip to the West Coast for the purpose of surveying the new Transcontinental Air Transport air-rail route. Major Lanphier accompanied him.

A new plane and engine have been constructed by the Moundsville Airplane Corp., Moundsville, W. Va. Charles Fasig, designer and builder, reports satisfactory results in preliminary tests.

Lieut. Frank Schilt, Marine Corps flier, has come to Washington to receive the Congressional Medal of Honor bestowed on him for bringing supplies to isolated troops and for carrying out wounded under fire in Nicaragua engagements.

Aerovane airway markers, described in our last issue, are to be erected immediately at 19 North Carolina cities and towns, it is reported. Some 60 of the new airway guide posts will be utilized.

Colonial Western Airways, Inc., operator of the new Albany-Cleveland air mail line, has established offices in the Ten Eyck Hotel, Albany. H. F. Wood has been appointed as Capitol District Manager.

Dedication of the new Schenectady, N. Y., airport took place June 1, 2, and 3. A pageant, which included contests for service and civilian fliers as well as exhibition flying, was a feature.

A House committee has reported favorably on a bill to award gold medals to Clarence D. Chamberlin and Charles A. Levine, who flew from New York to Germany last June in the Bellanca Columbia.

Yvon Milre of Cleveland, O., has been appointed Ohio dealer for the Berliner cantilever monoplanes, manufactured by the Berliner Aircraft Co., Inc., of Alexander, W. Va. The first plane has been sold to Demotte Modisette, Cleveland realtor.

The recently formed Lake Village Airways Corp. of Lake Village, Ark., announces the appointment of Lieut. James C. Youngblood, 154th Observation Squadron, A.N.G., as pilot and instructor. An American Eagle plane is owned by the company.

Appointment of Charles E. Tullar as manager of the patent department of the General Electric Co., Schenectady, N. Y., is announced by A. G. Davis, vice president Tullar, who has been assistant manager since December, succeeds A. D. Lunt, deceased.

Coffeyville, Kan., city commissioners have signed a five year lease on a 147 acre tract of land to be used as a municipal airport. Thomas I. Hill, Swallow plane agent, will move his planes from the South Coffeyville Airport to the new field, which is to be fully equipped, it is said, by July.

Lieut. Caleb V. Haynes, regular Army instructor with the 116th Aerial Observation Squad., Washington National Guard, has been named to succeed the late Maj. John T. Fancher as commander of the unit, states a Spokane report. Lieutenant Haynes has been in the flying corps for more than 10 yr.

Thea Rasche, German aviatrix now in this country, is being delivered a new Bellanca monoplane similar to the Columbia. The plane is equipped for a long distance flight with tanks of 500 gal. fuel capacity. Miss Rasche, it developed, did not purchase the Stinson-Detroiter "Adelaide," as previously reported.

A new American seaplane altitude record was established on May 28 when Lieut. Zeus Soucek piloted the Navy PN-12 to a height approximating 16,800 ft. The exact altitude will be determined when the two barographs are calibrated. The former American record was 7,979 ft., while the world mark is 19,196 ft.

# Cessna Laps the Field

## at the Kansas City Races

The only and real interesting event was the stellar performance of the new Cessna monoplane. Piloted by Francis "Chief" Bowhan, the Cessna plane left another monoplane and a far in its wake. He had gained a full lap on his nearest competitor at the end. Bowhan flew a "mean" craft. Starting with a lurch, he leaped into the air, flying close to the ground and rounding the pylons in a steep bank. Flying the course four times, he ended at the checkered flag, shooting his Wright Whirlwind job straight up for a climb of a 1000 feet. William P. McCracken, government aviation chief, was one of the first to congratulate the winner, and complimented "Chief" on his masterful handling of the cantilever plane.

*The Cessna's official time on the 6-mile triangular course in the 30 mile race at Kansas City was 157.2 miles per hour, taken from a standing start.*

Where does the Cessna Cantilever Cabin Monoplane get its remarkable speed? Wherein does it differ from all other cabin planes today?

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## Lieutenant Champion Preparing His Wright "Apache" for New Altitude Record Attempt

LIEUT. C. C. CHAMPION, Jr., U.S.N., holder of the world's altitude record, is busy with preparations for another altitude flight in his Wasp-engined Wright "Apache", as AVIATION goes to press.

Dissatisfied with the present record which is 38,418 ft., and believing that he can surpass this height by from 10 to 12 thousand feet, Lieutenant Champion is working overtime with his post-graduate studies at Annapolis, Md., in order to be free on week ends in Washington to make the altitude tests.

The little "Apache", which last year reached what Lieutenant Champion then and still believes to have been an indicated altitude of 47,000 ft., has been thoroughly reconditioned after its spectacular descent during which it caught fire four different times. A new Pratt & Whitney Wasp has been installed, the wings of the plane have been re-covered; the supercharger has been thoroughly tested and permanent recording high altitude instruments have been added.

The little plane is at the Naval Air Station, Anacostia, the scene of its former high altitude triumphs both as a land plane and a seaplane. At the time of the spectacular flight last July, the calibrated altitude figure did not mean an altitude record in view of the fact that Jean Callizo stood on the books as the record holder with a mark of better than 40,000 ft. Subsequently this was washed off the records as incorrect.

Champion, with his "American record", automatically stepped into the shoes of "champion of the world". Several months ago an aspiring Italian pilot eclipsed the 38,418 mark by a number of feet, but not as much as 100 meters which the regulations require before a new record will be granted. Knowing the capabilities of the Wasp engine and the little single seater Apache, as well as his own ability to withstand high altitude work, Lieutenant Champion is quite anxious for a new attempt.

Numerous unexpected delays may be encountered resulting in prolonging the tests and then again the flight may be executed immediately, it is said.

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## Coffman-Strong Aircraft Co., Clinton, Okla., Constructs First Experimental Monoplane

COFFMAN-STRONG AIRCRAFT Co., Clinton, Okla., has completed its first experimental model and is planning to put this plane in quantity production. It is a three place monoplane designed to use any power plant up to 150 hp. though the first model was tested with a 90 hp. Curtiss OX-5. This plane was used in the Oklahoma State Air Tour and is said to have excited much interest at every airport visited. One of the novel features in its design is that the control stick is suspended from the ceiling giving direct control to the ailerons mounted on the high wing. The plane has a span of 37 ft. and chord of 6 ft. 8 in., giving an area of 247 sq. ft. The airfoil used is a modified Clark Y. The length is 23 ft. 6 in. and height 7 ft. 3 in. It weighs 1040 lb. empty and has a gross weight of 1729 lb. According to figures supplied, the high speed is 120 m.p.h. and landing speed 38 m.p.h.

S. H. Coffman, president of the company, is the designer of the plane. For a number of years he has been doing stunt flying and commercial work. He has been working on this design for some time and as soon as factories are built in Clinton it is planned that a production of one plane a day will be maintained. The company is incorporated with $20,000 capital stock. H. R. Gilchrist is vice president and Doane R. Farr is secretary and treasurer.

## Fleet of Airplanes Will Leave Des Moines June 18 for State of Iowa Good Will Tour

MORE THAN 20 airplanes are expected to participate in the Iowa Good Will Tour which is to leave the Des Moines Municipal Airport June 18 to visit 10 of the larger towns in the state. A first prize of $1,000 has been posted for the winner of this five day jaunt. Second and third prizes are $300 and $100, respectively.

Only Iowa fliers, operating from airports within the state, may participate for the prize money. However, many manufacturers have been invited to join with their demonstration planes. The race is to be conducted along the same lines as the Ford Reliability Tours. It is being planned under the auspices of the Iowa chapters of the National Aeronautic Association. George Yates, the flying photographer, and Jack Walton, former Army flier, are in charge of all plans for the tour. No entry fee is required. Entries should be mailed to: Iowa Good Will Air Tour, 1014 Grand Avenue, Des Moines, Ia.

The tour will leave from Des Moines Municipal Airport Monday morning, June 18. The proposed itinerary is as follows:

June 18. Leave Des Moines, lunch Centerville, overnight Iowa City; June 19. Lunch Cedar Rapids, overnight Waterloo; June 20. Lunch Mason City, overnight Fort Dodge; June 21, Lunch Rockwell City, overnight Sioux City; June 22, Lunch Council Bluffs, return to Des Moines.

An invitation has been extended the Standard Oil Co. to send its Ford plane to accompany the fliers. The *Register—Tribune*, Des Moines newspaper, will send its new Fairchild monoplane "Good News", and Henry Bolte, prominent Des Moines insurance man, will include his Ryan monoplane "Miss Lois" in the list of entries. The Whites Aircraft, manufacturer of the "Whitey Sport", are planning to enter one or two of its new production planes, and the Christensen Aeronautical Service has promised to enter an Arrow Sportplane, of which it is distributor.

### To Make Iowa Airminded

The purpose of the tour is mainly to acquaint a greater number of Iowa people with the modern types of aircraft now in use and to create a more airminded atmosphere throughout the general Iowa public so that the state will share and readily respond to all aviation projects presented.

Nearly all of the towns to be visited have improved airports. Several prominent men will be taken along to address aviation dinners and banquets arranged in honor of the visiting airmen. The apparent success and benefits derived from a similar tour held in the state of Kansas has prompted the aviation enthusiasts of Iowa to promote this tour to its fullest extent.

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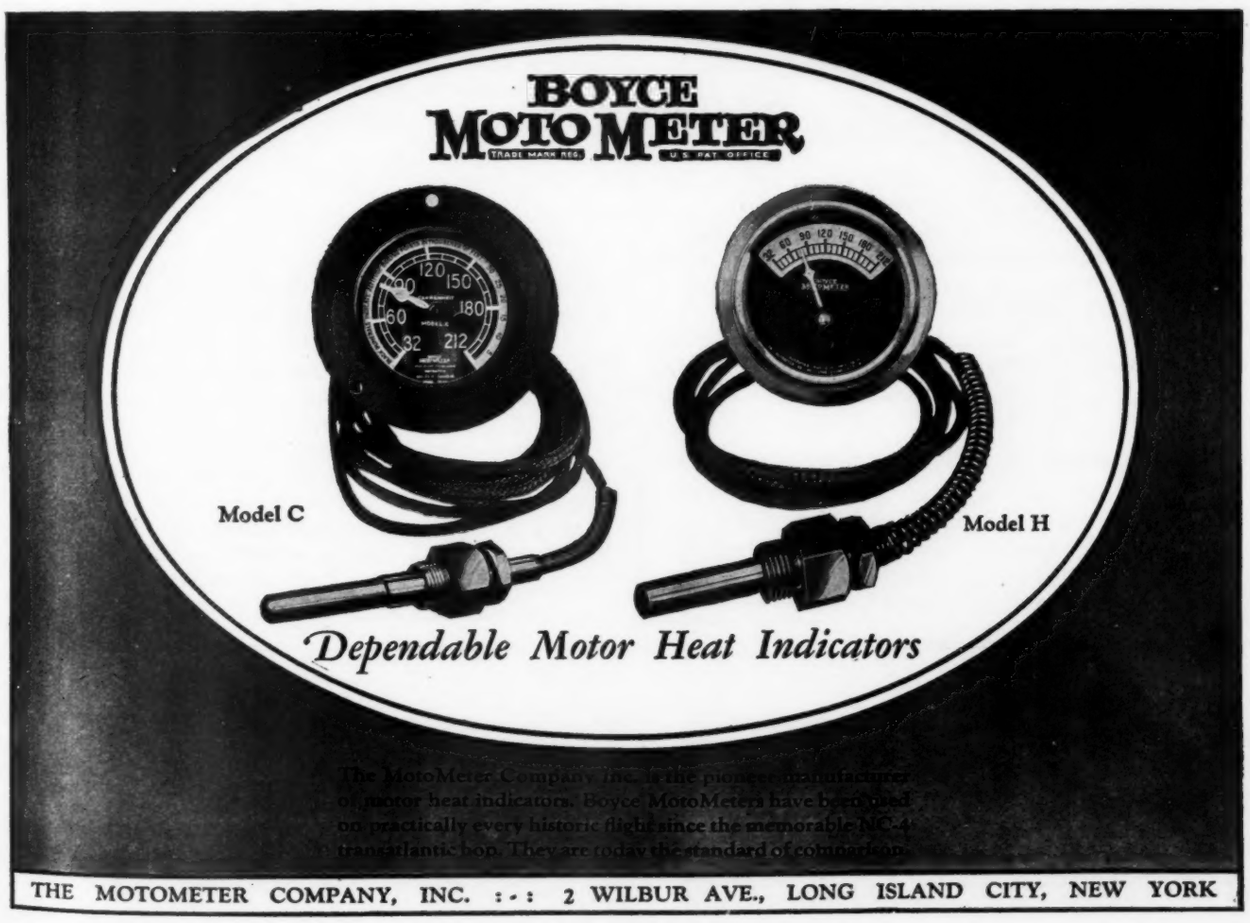
## Lindbergh Beacon's 8,000,000 Candlepower Beam Now Flashing on Los Angeles Tower

PERHAPS THE most significant feature of the dedication of the new Los Angeles City Hall recently was the flashing of the Lindbergh Beacon which has been placed at the top of the 452 ft. tower.

This light has a 900 watt filament lamp burning before a 24 in. mirror, the rays being concentrated by a 24 in. lens into an 8,000,000 candlepower beam that is visible for 60 mi. in fair weather. The light revolves six times a minute.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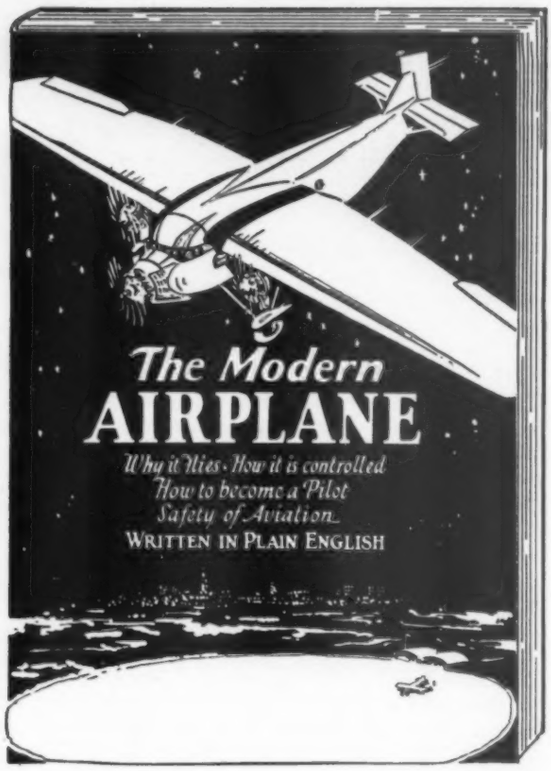


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# REVIEWS

*The book Department, Aviation, 250 West 57th St., New York City can supply all books mentioned except government publications. N.A.C.A. publications may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.*

Aircraft Handbook by Fred H. Colvin and Henry F. Colvin, McGraw-Hill Book Co., New York City. 464 pages. $4.00.

Third and revised edition of a handbook written in 1918 to meet war requirements. It has been brought up to date and includes new chapters on Department of Commerce Air Regulations, N.A.C.A. nomenclature for aeronautics, modern engines, modern instruments, and airport construction. This edition has been so revised that it can almost be called a new book. The chapters on rigging and assembly of the Curtiss JN4 are still included as are those on airplane propeller, on engine theory, and the Curtiss OX engine, Liberty engine, as well as the Hispano Suiza engine. The Wright Whirlwind, Curtiss D-12, Packard engines, and Pratt & Whitney Wasp engines are described in detail. The book is bound with a soft cover and is of convenient size.

Technical Publications Received

N.A.C.A. Technical Note 282. Corrosion Embrittlement of Duralumin. 1. Practical Aspects of the Problem by Henry S. Rawdon, Bureau of Standards.

N.A.C.A. Technical Note No. 283. Corrosion Embrittlement of Duralumin. II. Accelerated Corrosion Tests and the Behavior of High-Strength Aluminum Alloys of Different Compositions by Henry S. Rawdon, Bureau of Standards.

N.A.C.A. Technical Note 284. Corrosion Embrittlement of Duralumin. III. Effect of the Previous Treatment of Sheet Material on the Susceptibility of This Type of Corrosion by Henry S. Rawdon, Bureau of Standards.

N.A.C.A. Technical Note 285. Corrosion Embrittlement of Duralumin. IV. The Use of Protective Coatings by Henry S. Rawdon, Bureau of Standards.

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## Stock Corsairs Perform Well in the VO Class of the Curtiss Marine Trophy Race

HIGH SATISFACTION has been expressed with the performance of the Vought Corsairs in the VO observation plane class in the recent Curtiss Marine Trophy Race held at Washington, D. C. The two general purpose two seaters, both of which were brand new and not groomed for racing, showed speeds of more than 150 m.p.h., doggedly hanging to the heels of the single place pursuit planes. The leading Corsair showed better speed over the entire course than the first service Corsair built, which broke the world speed record for class C-2 seaplanes last year over a closed circuit.

### Fast Despite Ballast

Lieut. Comdr. W. K. Harrill, U.S.N., turned in an average speed of 149.61 m.p.h. in placing his Vought observation-fighter among the leaders. Unlike the single place pursuit planes, Harrill's craft carried ballast load as well as a great deal of service equipment. The Wasp engines in the two Corsairs had had less than three hours of flying before the starting gun. In fact, after the pontoons had been installed, but one check flight had been made to test the rigging.

## Kreider-Reisner Company's Added Facilities To Double Production of Challenger Planes

THE KREIDER-REISNER Aircraft Co., Inc., has recently increased its plant facilities in Hagerstown, Md., by acquiring several additional buildings. The addition of this new floor space gives them a total of 27,000 sq. ft. and will make it possible to increase the production of Challenger airplanes from three a week to eight a week. By the first of July they hope to be producing eight planes each week.

The original Challenger was built in a small frame building approximately 30 x 50 ft. and located in the northern part of Hagerstown. Later a one-story factory building 50 x 100 ft. was acquired. This building is located just across the railroad tracks from the original building and the two housed all manufacturing operations until the first of May. Three planes a week were produced in these quarters. In order to supply the demand for Challenger planes it was necessary to increase production and this required more floor space. A two-story building approximately 50 x 132 ft. and located within 100 ft. of the other manufacturing building, was obtained. Fuselage construction and assembly are carried on in this building, which also houses the offices and store-rooms.

Wing construction and all painting and doping are still carried on in the original manufacturing buildings. Engine rebuilding and storage are taken care of in a two-story building which is approximately 60 x 80 ft. and located in an entirely different part of the town. The engineering offices and production offices are located in a small building near the group of manufacturing buildings.

Finished planes will be erected at the Kreider-Reisner Airport which is three and a half miles from the factory. As the factory is at the edge of the town, it will not be necessary to truck the fuselage and wings through any congested traffic districts.

## New Cincinnati, O., Chapter of National Aeronautic Association Appoints Officers

CINCINNATI CHAPTER, National Aeronautic Association, at its first meeting, recently, elected the following officers: Henry D. Hopf, attorney, president; Hal A. Speer, sales manager of the International Aircraft Corp., vice president; Clarence Tovey, secretary; E. J. Wade, treasurer, and Stanley S. LaSha, Stanley C. Huffman, and Perry V. Ogden, trustees. Clarence D. Chamberlin, international flier, recently brought the club's charter to Cincinnati when he came to the city to dedicate the International company's field.

Charter members in the organization, which is open to all persons interested in aviation, are: Clarence Tovey, Albert H. Jahnke, Jr., A. J. Luzader, F. J. Loomis, Emile du Maulin, Arthur Strathmann, Lovell E. Connely, Henry D. Hopf, Theodore R. Hunter, Ralph V. McCardle, Frank G. Showalter, J. H. Reiter, John Shepherd, James L. Knight, Stanley Huffman, Hal A. Speer, Perry V. Ogden, E. J. Wade, Stanley S. LaSha, Albert W. Roth, W. F. La Sance, Stanley Duncan, Walter A. Draper, O. V. Sawyer and Earl Parker.

## Lieutenant Sweeley Makes Dawn-to-Dusk Buffalo-Galveston Flight in a Falcon Plane

LIEUT. WILLIAM R. Sweeley, Army pilot, recently completed a dawn-to-dusk flight from Buffalo, N. Y., to Fort Crockett, Galveston, Tex. The flight was made in approximately 13 hr. 25 min. in a new Curtiss Falcon A-E plane, stops for fuel being made at Louisville and Memphis. The distance is estimated at 1,525 mi.


# A Message to Aero Manufacturers, Operators and Pilots

THE existence of Aerol Shock Absorbing Struts effects your business whether you use them or not. Manufacturers offering them have an advantage over their competitors. Operators whose planes are equipped with them enjoy lower operation cost and greater passenger acceptance. Pilots who land on them have the surety and confidence of smoother, faster landings and comfortable taxiing regardless of the condition of the ground.

Aerol Shock Absorbing Struts absorb landing impact equal to several times the weight of the plane *without recoil.*

They operate on the air and oil principle. Impact is absorbed by the compression stroke of the strut piston. The resulting compression is intantly dissipated through the oil chamber thus eliminating recoil.

Trouble-free, dependable and economical, Aerol Struts recommend themselves to the attention of everyone connected with the manufacturing and operation of heavier-than-air machines. They are a product of our 25 years' experience with compressed air appliances.

*Complete information supplied on request.*

CLEVELAND PNEUMATIC TOOL CO.
3737 E. 78th St., Cleveland, Ohio

## A.S.M.E. Will Hold Special Aero Meeting In Conjunction With Detroit Air-Olympics

A SPECIAL national meeting of the aeronautics division, American Society of Mechanical Engineers, will be held in Detroit June 28, 29, and 30 in conjunction with the Detroit Air-Olympics to be held in that city on June 30, according to an announcement by Karl Betts, assistant manager of the aircraft events for the Detroit Board of Commerce.

The meeting will embrace six technical sessions, addressed by several of the foremost aeronautical and mechanical engineering authorities in the world, and is expected to be attended by hundreds of the 2,000 members in the society's aeronautical division.

Opening remarks will be made by F. H. Low, chairman of the society's Detroit section. Subsequent speakers, according to the program, will include William B. Stout, general manager of the airplane division, Ford Motor Co.; William P. MacCracken, Jr., assistant secretary of the Department of Commerce, in charge of aeronautics; Harold Caminez of Fairchild-Caminez Engineering Corp, Farmingdale, L. I.; F. Handley-Page of London, Eng.; F. K. Kirsten, professor of aeronautical engineering, University of Washington, Seattle; Dr. S. A. Reed, propeller manufacturer, New York; Alex Dow, president of the Detroit Edison Co., and president of A.S.M.E.; James G. Ray, operations manager, Pitcairn Aviation, Inc., Philadelphia; Charles B. Norris, chief engineer, The Haskelite Co., Grand Rapids, Mich.; G. L. Weeks, Jr., of Fleischmann Transportation Co., New York; J. F. Truax of Forest Products Laboratory, Madison, Wis.; Lieut. Carl Green, materiel division, Army Air Corps, Dayton, O.; Mac Short of Stearman Aircraft Co., Wichita, Kan.; Dr. Carl G. Rossby, chairman, Daniel Guggenheim Committee on Aeronautical Engineering; Gen. W. E. Gillmore, commanding officer of Wright Field, Dayton, O.; Carl B. Fritsche, general manager, Aircraft Development Corp., Detroit; and Col. V. E. Clark, Buffalo, N. Y. It is expected that Capt. George Hubert Wilkins, Arctic explorer, also will address one of the sessions.

Stout will talk on "Aviation as a Transport", MacCracken on "Aeronautical Activities of the Department of Commerce," Handley-Page on "The Automatic Slot", Ray on "The Preparation of an Airline for Commercial Operations", and General Gillmore on "Military Aviation". The other speakers have chosen appropriate subjects.

The Book-Cadillac Hotel will be the headquarters of the engineers while in Detroit.

## Browning Aircrafters Organized in Indiana To Turn Out Light Szekely Engined Plane

THE BROWNING Aircrafters have been organized in Gary, Ind., for the purpose of designing and manufacturing a light single place biplane, to be powered with a 40 hp. Szekely engine. It is designed to have a high speed, according to its manufacturers, of about 100 m.p.h. with a cruising radius of close to 1000 mi. It will be an open cockpit type with welded steel tube fuselage and wooden wings, split type landing gear and Aerol shock absorbers. At a later date, according to W. Browning White, president of the new company, work will be started on a two place cabin, cantilever wing biplane, slightly larger in size but powered with the same engine as the open model. This plane will be constructed of welded steel tubing throughout.

Charles Raymond is vice president of the Browning Aircrafters, with Robert Ahrens as secretary and treasurer, and F. J. Goodrich in charge of construction.


# Fokker Aircraft Corporation

**Units** { 1 share of First Preferred ($25 par)
1½ shares of Common (no par)

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BULLETIN ON REQUEST

## W. C. Simmons & Co.

40 Exchange Place New York

Telephone—Hanover 7991

## Wright Cyclone Engines to be Offered For Commercial Installation This Fall

WRIGHT CYCLONE engines will be ready for commercial installation this fall, according to a recent announcement by Charles L. Lawrance, president of the Wright Aeronautical Corp., Paterson, N. J. To date, the Navy Department has absorbed the entire production of this 525 hp. engine.

The Cyclone, a large air cooled, radial type power plant of nine cylinders, is the engine used in the PN-12 Navy seaplane which recently established a new world seaplane endurance record of 36 hr. 1 min. 14 sec. at Philadelphia.

## Mrs. Marie Evatt Vines is New General Manager of The Plycor Company in Chicago

MRS. MARIE Evatt Vines has been appointed general manager of The Plycor Company to succeed C. W. Coye. This company is distributor of aircraft plywood manufactured by one of the largest plywood companies in Europe which has been supplying the bulk of the European trade. The executive offices of The Plycor Company are at 1524 Western Ave., Chicago, Ill.

## The "Starling" Biplane

*Continued from page 1599*

propeller is standard equipment on the Starling powered with an OX-5 engine, but steel or wood propellers are optional on the air cooled models.

The landing gear employs a combination hydraulic and shock cord arrangement that eliminates practically all noise on landing. The 26 by 4 wheels, on which the hub caps are streamlined, are spaced on 6 ft. 6 in. centers.

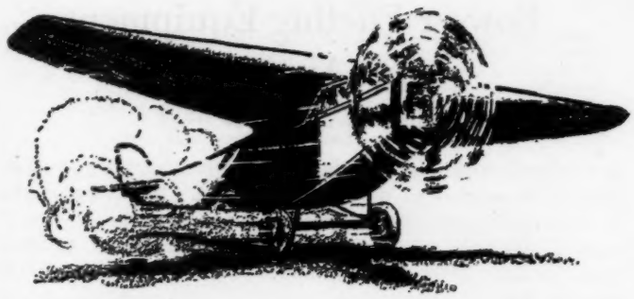
All possible parts of the plane are streamlined and all struts as well as exposed fittings are nickel plated. The upper half of the fuselage is finished in dark blue, the lower half is light blue, while the wings and tail group are silvered. With the experience gained through the design of two planes with approved type certificates, Orville H. Hickman has produced a plane that presents a trim appearance and has a high performance. Since the Starling Aircraft Co. is well financed, facilities are being rapidly provided to facilitate an increasing production of this light commercial plane to meet the demand.

From trial flights by Gene Shank the manufacturer has submitted the following figures:

| | |
|---|---|
| Maximum speed | 104 m.p.h. |
| Cruising speed | 95 m.p.h. |
| Cruising range | 400 mi. |
| Service ceiling | 15,000 ft. |
| Landing speed | 30 m.p.h. |

The general characteristics of the Starling are as follows:

| | |
|---|---|
| Span, upper wing | 32 ft. |
| Span, lower wing | 29 ft. |
| Chord upper and lower wing | 62 in. |
| Stagger | 14 in. |
| Incidence, upper wing | 1 deg. |
| Incidence, lower wing | 2½ deg. |
| Dihedral, upper wing | 0 deg. |
| Dihedral, lower wing | 1½ deg. |
| Length overall | 23 ft. 4 in. |
| Height overall | 9 ft. |
| Weight empty | 1237 lb. |
| Pay load | 600 lb. |
| Gasoline | 40 gal. |

When he "gives her the gun" . . . will the field be clear?

When the pilot heads his ship into the wind and "gives her the gun", a clear field is a necessity. He has no opportunity to dodge persons wandering thoughtlessly about the field — an attempt to change his course will likely end in disaster.

Give pilots all the distance the field affords for taking-off. Keep visitors in a safety zone with a strong Anchor Chain Link Wire Fence.

Anchor Fences are made in all heights and types for every need. Attractive appearance and everlasting service are provided through the Exclusive Anchor Features: (1) U-bar Line Posts. (2) Square Terminal Posts. (3) Drive-Anchorage. (4) Anchor-Weld Wire Gates.

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Representatives in all principal cities.

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Buy the fence with
1. THE STRONGEST POSTS
2. THE STRONGEST GATES
A NATION-WIDE FENCING SERVICE

# Bowser Fueling Equipment for Airports

*Continued from page 1598*

is equipped with a self closing nozzle which permits complete control of delivery at the end of the hose. In the pit is also located the Bowser Xacto Meter which records the amount of each delivery and also keeps a continuous record of all gasoline passing through the Meter. The individual delivery counter may be returned to zero after each operation which makes it almost impossible to lose track of the amount of gasoline delivered to any plane. In the pit is also located a vapor proof switch by means of which the pumping mechanism is started and stopped.

In operation the switch in the pit is closed, starting the pump—which operating through a by-pass and relief valve, keeps a constant pressure on the lines until the nozzle is opened at the end of the hose. After the required amount has been delivered to the plane, the nozzle is closed and the pump again operates through the by-pass and relief valve until the switch is opened which stops the pumping mechanism. Any quantity of gasoline, from one to 1000 gal. or more can, in this way, be delivered in a constant steady stream at a speed of 18 to 20 gal. per minute. The speed of delivery can be reduced to any desired extent by partly closing the valve at the end of the hose. This in no way affects the accuracy of the Meter which is a volumetric displacement type and consequently accurate under all conditions of flow and pressure. This Xacto Meter is generally conceded to be the most accurate device ever built for recording the flow of liquid through a pipe line.

The pumping mechanism consists of a 1¼" pump, directly connected to motor, furnished complete with by-pass air chamber and relief valve. In addition it is furnished with an air release, which eliminates any possibility of air or vapor being measured by the Meter, even in the event the storage tank should be emptied, and the Bowser water separator, which operates on the centrifugal principle and eliminates all water and moisture from the gasoline. A line strainer with fine mesh wire screen which is placed ahead of the pump catches any dirt particles or impurities which might be sucked up from the tank. Either one, two or three pits may be connected to the same pumping equipment in the hangar.

The illustrations show manner of installation and also show the extensive serving radius of one of these pits. In making installation, it is suggested that the serving limits of the pit be outlined upon the ground with crushed stone or something of that character and that identification marks be placed so that visiting planes would have no difficulty in locating servicing point and could readily taxi within the circle upon landing.

### Provision Made for Heating Pits

A more complete pit has been developed which includes gasoline, oil, water and air service. Each of these items is delivered through a 50 ft. hose with control at the end of the hose and reels for each service are provided for easy handling of the hose in preparation for delivery or after delivery has been made. Xacto Meters are provided for both gasoline and oil and provision is made for heating the pit in winter through steam coils. The water and oil are conducted with the steam through a conduit so that even in the severest weather hot oil and water service is available.

All of the equipment in these pits is mounted at the factory so that it is necessary only to make connections to the outside of the pit in making installation.


TRIPLEX
Safety Glass Co., Ltd.

Manufacturers of non-shatterable glass used in windshields and windows of moving vehicles.

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100 BROADWAY NEW YORK
*Telephone Rector 2300*

When the complete pit is not used a portable outfit for lubricating oil is provided, which consists of a two compartment wheel tank. Each compartment has a capacity of 32 gal. and is equipped with a measuring pump, delivering accurately pints, quarts, half gallons or gallons. Hose is provided for each pump so that delivery may be made directly from wheel tank to oil reservoir on planes. Wide tires on the wheels make it possible to use the wheel tank on the flying line as well as in the hangar or shop. Each wheel tank provides storage and dispensing for two different oils so that

*An S. F. Bowser & Co. fueling pit for gasoline service.*

two wheel tanks would provide for four different oils which should meet ordinary needs of commercial and municipal fields.

While the stationary equipment seems in many ways the most practical for commercial aviation it is recognized that mobile equipment has its place also. Many fields will use mobile equipment as a supplementary service to the stationary equipment, using the stationary equipment not only for direct fueling of planes but also for supplying the mobile equipment. Other fields may use the mobile equipment for primary service. Because of the advisability of training troops even in times of peace to use war equipment, the Government will in all likelihood favor mobile equipment for government field use.

Bowser & Co. has had extensive experience in designing mobile fueling equipment and is building a large number of mobile outfits for government fields at this time.

While standard mobile outfits will undoubtedly be offered as aviation continues to develop, Bowser & Co. is in a position now to equip the standard truck chassis with fueling equipment giving similar service facilities to those incorporated in its stationary apparatus.

## The Aero Craft "Aero Coupe"

*Continued from page 1597*

Designers of the Aero Coupe have succeeded in building a fuselage of excellent streamline shape, at the same time keeping the cockpit large enough to accommodate two men seated side by side. The fuselage is conventionally constructed of welded steel tubing. Bracing is effected in the same manner. Fairing on the fuselage is composed of spruce strips on plywood farmers, the multiple planes giving the fuselage a well-rounded appearance. The Warner engine, but 35 in. in diameter, makes possible a splendid streamline along the


C & L 32

This is one of the most popular blow-torches we have ever made. It is more expensive than the 158 because it is made for much harder use. It is designed for the man who uses a blow-torch in his daily business and demands not only excellent performance but rugged ability to stand rough handling. 32 contains the most advanced, patented C & L blow-torch improvements. It also has a red handle. Sure sign of satisfaction.

Patented Clayton & Lambert improvements mean longer, better service

A BLOW-TORCH looks husky, and it has to do a lot of hard, rough work. But it's a pretty fine instrument, and unless it's made just right any one of a number of things can put it out of commission.

Clayton & Lambert want to supply you with a blow-torch that will give you full value for your money. So we've not been satisfied merely to give you a blow-torch that does its job in fine style. We've also made it so it can stand a lot of very hard use, and still keep right on working.

Ordinarily if you strained or broke the handle you'd open the gasoline container and lose your compression. But Clayton & Lambert handles are fixed in such a way that an accident to the handle won't hurt anything else. By the way — notice the handle. It's *red*. We made it red so you could identify a Clayton & Lambert torch clean across the hardware store.

Another thing is the plug in the bottom. We've put a lead washer in there, so when you take up the screw you seal that opening tight; it can't leak. Not just when it's new. Always.

Those are just examples of improvements, many of them patented, that Clayton & Lambert has made in every part of a blow-torch. They're mighty important, for they make the difference between short and long use, between ordinary and excellent service.

As a result, Clayton & Lambert blow-torches are the most popular in the world. And so many people buy them that we can give you the benefit of the economies of volume production. You can't find better value than in Clayton & Lambert.

CLAYTON & LAMBERT MFG. CO.

*Detroit, Michigan*

THANK YOU *for mentioning* AVIATION

entire body. Like the wings, the fuselage is slip-covered with Flightex, and finished with five coats of clear dope and two coats of dark blue lacquer. Steel work in the fuselage interior is covered with oxide primer and lacquer.

Control surfaces are all of steel construction, and fabric covered. Elevators are of one piece. The fin is adjustable on the ground, and the stabilizer is adjustable in the air by means of a lever near the pilot, the lever having a wide range of adjustment. The tail surface ribs of the Aero Coupe are of lightened sheet steel, the surfaces being attached by means of hinges and the strap variety, making for increased aerodynamic efficiency and attractiveness.

### Split Type Stabilizer Used

Another feature regarded by many as making for aerodynamic efficiency is a split type stabilizer, that member being affixed to either side of the fuselage. The plane's stabilizer is braced by two streamline tube struts, with adjustable ends. Two streamline wires brace the fins. The rudder is balanced. All tail surfaces are conventional in disposition, and are of pleasing contour in shape.

In the landing gear split type axles of seamless, heat-treated steel tubing are used. The axles are finished in chrome molybdenum, and streamlined. The lower ends are composed of vanadium steel bars, lightened, and fitted with Timken roller bearings. On the Aero Coupe the lock nut is inside the wheel hub, and the hub is faired with an aluminum cap. Wheels are of six feet tread, and well ahead of the center of gravity. Chrome molybdenum radius struts, of heat-treated, streamlined steel tubing, and Aerol shock struts complete the construction of the undercarriage. The axle and radius struts are hinged on the bottom of the fuselage center line, while the shock struts are attached to the intermediate longeron. Bendix expansion brakes and 28 x 4 tires are part of the equipment on the wheels, the brakes being controlled through cables and foot pedals in the pilot's cockpit.

Undercarriage fittings on all forthcoming models will make installation of pontoons possible. The plane's tail skid is constructed of round chrome molybdenum, swiveled, but not steerable from the cockpit. Conventional steel fittings, with a shoe, and Oleo shock absorbers complete the assembly. The complete unit, accessible in its upper portion through an aluminum door in the side of the fuselage, can be taken out by removing three pins. The ground angle is 14 deg.

The Aero Coupe is powered with a seven cylinder, radial, air cooled, 110 hp. Warner engine, the engine being mounted in ring type steel tubing, welded, and the entire mount being detachable at the fire wall. The engine cowling is of the automobile hood type, and quickly detachable by means of snap fasteners. Ventilation in the aluminum cowling is by means of louvres located adjacent to the fire wall.

Two main 20 gal. gasoline tanks, located in the center section, feed the engine by gravity. The tanks are made of welded aluminum and are mounted in steel tube cradles. Sight gauges drop below each tank. Fillers are easily located. The outlets are built on the outside front of each tank. All fuel and oil lines are copper, with conventional three way valves and sediment bulbs. The oil tank, four gallons in capacity, also is made of welded aluminum. An aluminum fire wall and a Fyre-Fyter extinguisher, the latter located to the right of the pilot in his cockpit is provided as safety precautions.

The present model is equipped with a Hartzell propeller, 7 ft. 9 in. in diameter, although the pitch best suited to the plane has not yet been decided. The engine has no starter, although provision has been made for one. Controls for the engine are of the push-rod variety.

Wiring in the plane provides for interior and running lights, for radio communication and an electrical starter. The exhaust system is of the usual collector ring type.

The Aero Coupe will seat two passengers, side by side, over


# Galt Joint Union High School and Junior College

## GALT, CALIFORNIA ANNOUNCES

A complete four year aeronautical course beginning the Junior year of High School work and ending at the completion of the Sophomore year of College, especially preparing high type young men for the Army and Naval Cadet Schools and higher engineering schools. All work, including fifty hours of dual flying instruction, is given gratis. This work and also post-graduate work is limited to a select group of students whose character and past training, including a rigid physical examination, is passed, and who are finally selected by the admission committee.

The Galt Joint Union High School has aroused national and world-wide interest during the last two years as the first High School known to actually introduce flying and aeronautical work in a public four year High School. During the past year, gifts from the Government and other sources in aeronautical equipment have exceeded the sum of $150,000.00, including the latest and most modern planes. Owing to the demand and the large amount of equipment on hand, the Board of Education has established a Junior College course in addition to the High School work, the college work being accredited by the University of California.

The Galt Joint Union High School and Junior College is located in the famous Sacramento Valley only fourteen miles air distance from the famous Government Mather Field. The school has its own flying field adjoining its buildings and is one of the model fields of the valley, having graded runways in all directions and capable of handling any amount of traffic.

### *Admission*

Students are expected to make formal application for admission to the High School and Junior College upon blanks supplied for the purpose. Information is sought by this means not only concerning the scholarship of the students but also concerning their character, attitudes, and probable ability to appreciate and co-operate with the ideals and standards of the College Department. A limited number of those who meet these questions will be acceptable.

Students from other approved high schools or colleges are admitted without examination upon presentation of properly authenticated certificates showing in detail the requisite completed course.

Blanks will be furnished by the secretary of the High School and Junior College, on which the record of the work done will be certified.

### *Admission Units*

For admission to the Junior College Department, High School graduation with a total of fifteen (15) recommended units is required. The definition of the word "unit" as accepted by the University of California in its admission of students into that particular institution.

*For further information address the Aeronautical Department, Galt Joint Union High School and Junior College, Galt, California.*

the center of gravity, the pilot being located behind and above the passengers' cockpit. The cockpits are exceedingly roomy, that for the passengers being 36 in. wide inside and 45 in. high. Spaciousness in the pilot's cockpit is practically the same. Upholstery is of good quality imitation leather, gray in color, forming a pleasing contrast with the dark blue exterior of the fuselage. The walls of both cockpits are lined and the aluminum bucket seat-backs are upholstered with hair. Deep cushions, quickly detachable for the substitution of parachutes and safety belts, complete the interior furnishings. The belts are of web, and are specially made.

Accessibility to the pilot's cockpit is facilitated by means of conveniently located steps and handles. For the front cockpit wide walks on the lower wing panels in conjunction with a large door on the left hand side of the plane make for easy access or egress. Visibility is excellent from both cockpits, due to a combination of features, most important of which are the adjustable seats, the tapering small nosed fuselage, stagger, and the low position of the upper wing,

*The Aero-Craft "Aero Coupe" powered with a 110 hp. Warner "Scarab" engine on exhibition at the All-American Aircraft Show at Detroit.*

which is almost on a level with the pilot's eyes. The pilot's windshield is of triplex, three piece, and large enough to shelter the cockpit as well as provide unobstructed vision. Windows in the passenger's cockpit are of Pyralin, and a heater is provided in the cockpit's floor, making use of heat from the exhaust gases.

An Elgin unit control instrument board is provided for the pilot, while in the front cockpit a few instruments are grouped in the center of a board, hinged at the top, to provide access to the luggage compartment forward of that cockpit. All fittings and trimmings in the cockpits are cromium plated. The floors are of plywood and carpeted. A second baggage compartment, large enough to accommodate two good sized suit cases is provided behind the pilot's cockpit, and accessible from outside the plane.

### Dual Stick Type of Control

Controls are of the conventional dual stick type, having duralumin tube sticks, with rubber grips. Double cables are provided to the elevators and the ailerons are controlled by means of dural tube push rods. The stick in the front cockpit is easily removable and spring clips are provided for holding it. The rudder is controlled by adjustable foot pedals of undersling type, single cables being utilized.

Inspection covers of pyralin are provided in the wings at aileron control hinge points.

It has been stated by the manufacturer that the design of the Aero Coupe has been worked out in accordance with the Department of Commerce specifications. The general data and dimensions submitted are as follows:

| | |
|---|---|
| Length overall | 24 ft. |
| Height | 8 ft. 6 in. |
| Span, upper wing | 32 ft. |

Beauty and Style
mark these two- and three-place personal flying ships.

Prices (Subject to Change)
$2,375 and $3,000
with LeBlond Engines

*Write or Wire for Dealer Territory Now Open*

OHIO AERO MANUFACTURING CORPORATION
Youngstown, Ohio

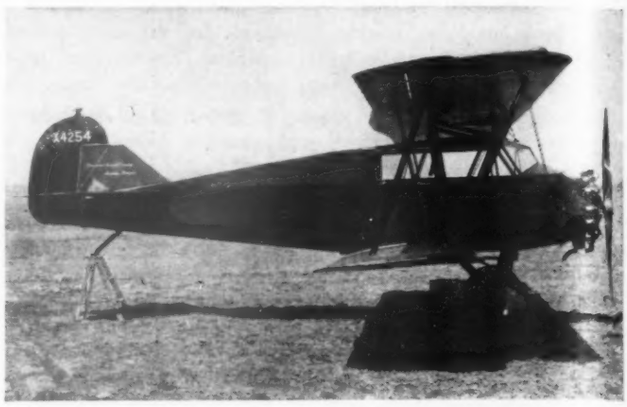
| | |
|---|---|
| Span, lower wing | 28 ft. |
| Wing area | 250 sq. ft. |
| Landing gear tread | 6 ft. |
| Power plant | Warner Scarab 110 hp. at 1850 r.p.m. |
| Weight empty | 1100 lb. |
| Pay load | 550 lb. |
| Useful load | 1000 lb. |
| Gross weight | 2100 lb. |
| High speed | 115 m.p.h. |
| Cruising speed | 100 m.p.h. |
| Climb | 900 f.p.m. |
| Service ceiling | 12,000 ft. |
| Cruising radius | 600 mi. |

## The Warner "Scarab"

*Continued from page 1596*

exposed, as are the rocker arms, as far back as the fulcrum point. Behind this, the valve mechanism is housed in an aluminum alloy box, the aluminum cover of which may be easily removed to make tappet adjustments. The valve gear mechanism is thus protected from dirt, while the springs are exposed for cooling purposes. The sides of the box also act as supports for the rocker arms and are bolted to the cylinder head with two 5/16 in. bolts. The rocker arm operates on a bronze bearing lubricated by a Zeck Alemite fitting. The cylinder head is shrunk and bolted to the barrel. Eight bolts are used to attach the head to the barrel and eight bolts are used to hold the cylinders to the crankcase. The skirt of the cylinder barrel projects about 1½ in. into the crankcase to prevent surplus oil from running into the cylinders.

Permanent mold pistons of Bohnalite are used. They are of flat head design with two American Hammered compression rings and one Perfect Circle oil scraper ring. They weigh only one pound five ounces each. The piston pin is full floating and bears directly on the piston with bronze bearings in connecting rods. Both master rods and link rods are of I section. The master rod is of two piece design with a babbitted bearing for the crank pin. Through bolts locate the wrist pins which take their bearings directly in the master rod big end. This construction is said to elimi-



*Showing the installation of the Warner "Scarab" in a Paramount "Cabinaire".*

nate plugging the pin. There are separate oil leads from the crank pin to each link rod bearing.

The crankshaft is a single piece machined on all surfaces. It is very short, making for greater stiffness. There are two main bearings and one thrust bearing. The propeller hub flange is spliced on to the crankshaft and is part of the engine. In the rear is the accessory drive, connected to the crankshaft by an Oldham coupling.

The two cam rings in the rear are each one piece forgings,


# Edo
## Pontoons and the Ryan Brougham

THE Ryan Brougham, the ship made famous by Lindbergh and made popular by its own merits, has now proved its quality as a Seaplane. And what a Seaplane! With its exceptionally quick take-off and with the usual snappy performance of the Brougham hardly affected by the weight of floats, it becomes a natural leader in the class of Wright engined Cabin Seaplanes.

With its wonderful performance the Ryan Brougham Seaplane combines thorough practicability essential for commercial work. Two side doors of the fuselage, in conjunction with flat and wide decks of Edo floats, provide very comfortable means for passengers getting in or out. Shallow draft at the stern and at the bow allows the ship to be brought close to a beach, again making embarking and disembarking more comfortable.

Edo straight sided floats make taxiing very easy, and this is an important feature in Seaplane operation. Good seaworthiness is assured by large displacement of the floats, giving reserve buoyancy of 120%. High location of the wing allows the Seaplane to be brought sideways to any moderately high dock, pier or barge like a motor boat. Built of "Alclad" and Anodically treated the floats resist corrosion and cannot rot or soak water, thus allowing the Seaplane to be moored in open and eliminating all the trouble of frequent launching which would hinder operation.

EDO

EDO AIRCRAFT CORPORATION
COLLEGE POINT, L. I., N. Y.

STANDARDIZED ALL METAL SEAPLANE FLOATS

with the gear on the inside, an integral part. The cam rings each run at ⅛ engine speed and each has four lobes. In contact with the rings are the roller followers working in permanent mould aluminum valve guides and operating duralumin push rods with pressed ball ends. The push rods are enclosed in aluminum tubes and are fitted with a roller tappet at the upper end.

The crankcase is made up of two heavily ribbed halves joined on the center line of the cylinders. This construction is said to facilitate the assembling of the connecting rod and crankshaft as a unit, reducing production costs. In addition, it assures more uniform and sound castings and eliminates a number of foundry problems. It is made of aluminum alloy. The intake manifold induction system is carried in a separate casting bolted to the rear of the crankcase. It consists of annular induction ring with the manifold pipes connected to it and bolted to the sides of the cylinders. The mounting ring is integral with this casting. It is circular with a diameter of 17 in. having eight mounting studs.

Mounted below and to the rear of the cylinders is the Stromberg NAS 5A carbureter with the intake heated by the

*A Stinson "Junior" fitted with a 110 hp. Warner "Scarab" engine.*

exhaust gases of the two lower cylinders. Between the carbureter and the annular induction ring is the oil sump, connected to the scavenger oil pump which feeds to the oil tank, from where the oil is forced by the pressure pump to all of the plain bearings and by splash to the cylinders. The engine is equipped with two Scintilla magnetos, each mounted at 33 deg. from the center line so as to make them more accessible and to allow for the mounting of a starter between them. The magnetos are driven through bevel gears, on SRB ball bearings, from the counter shaft coupled to the crankshaft.

The general specifications on the Warner Scarab engine are as follows:

| | |
|---|---|
| Type | static radial, air cooled |
| Number of cylinders | 7 |
| Number of cycles | 4 |
| Propeller drive | direct |
| Rated power | 110 hp. |
| Rated speed | 1850 r.p.m. |
| Maximum power | 122 hp. |
| Maximum speed | 1950 r.p.m. |
| Weight dry, without hub or starter | 270 lb. |
| Specific weight | 2.45 lb. per hp. |
| Guaranteed fuel consumption at rated power | .50 lb./hp./hr. |
| Guaranteed oil consumption at rated power | .01 lb./hp./hr. |
| Compression ratio | 5.2 |
| Mean effective pressure | 112 |
| Bore | 4½ in. |
| Stroke | 4½ in. |
| Displacement | 422 cu. in. |
| Overall diameter | 35½ in. |
| Overall length, without starter | 27½ in. |
| Diameter of mounting ring | 17 in. |
| Ignition | dual Scintilla |
| Carburetion | Stromberg NAS 5A |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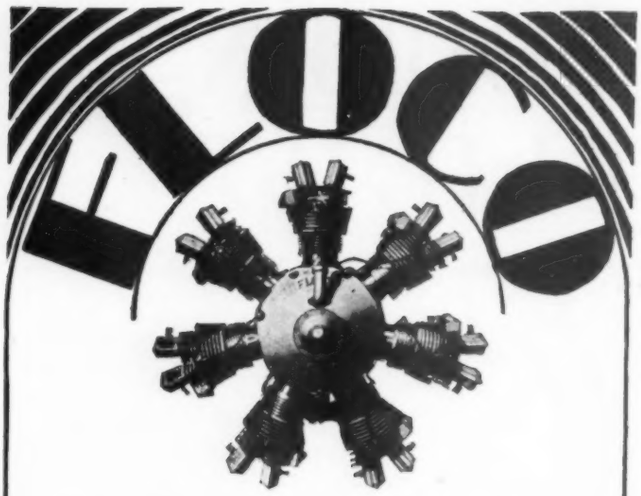


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# Naval Reserve Aviation

*Continued from page 1595*

country, according to naval officials. These institutions are the Massachusetts Institute of Technology, New York University, George Washington University, the University of Michigan, Armour Institute, and the University of Minnesota, Washington University, the University of Southern California, the University of California and the University of Washington.

"In most of these schools the course is accredited as an elective and is open to juniors and seniors," one departmental official explained. "In some of the schools it is day work and in others the course is given as night work. The schedule and classes, of course, differ slightly in each. Naval reserve officers supplement the instruction given by the faculty of each school. To supplement the library and laboratory equipment, the department issues books and material.

"The number of students in the ground school at the present time is something like 800. Providing appropriations for the coming year are made by Congress as we expect, 88 will be selected for flight training. This number may be increased. At present the number of students who can be handled annually at each of the four reserve aviation units is about 22. Heretofore we have had three and sometimes four primary and advanced classes a year. In the future, it will probably be arranged so that there will be two classes each summer."

## Syllabus Lists 10 Subjects

The syllabus for the training of student aviators, issued by the bureau, lists 10 subjects for study in the preliminary ground school course. Of these, structure and rigging and engines are considered of the most importance. Ten hours of instruction are given in each of these subjects. Sea and aerial navigation follow with eight hours each. Six hour units of instruction are provided on theory of flight, practical flying and Navy regulations; and four hours each are devoted to aerology and scouting. Aviation history receives but three hours.

The actual instruction occupies 65 hr. of the student's time. In addition to this, 16 hr. are required for examinations. Two hours each are devoted to the six most important subjects, and one hour each subject is allotted for examinations on the remaining four. Each of the subjects is "weighed" according to its relative importance, and it is these weights that are used in computing the student's mark for the course. The 10 hr. instruction in flying and the 30 hr. solo time, which the student aviator receives at the reserve aviation unit, "weigh" an amount equal to the ground school course. The final mark for the primary course is one-half that of the preliminary ground training added to the final mark in the primary flight training.

Practical work on the planes they learn to fly is included as a part of the course for student aviators at the various reserve stations. In the advanced course, further ground school work and practical training are provided.

Ten hours of instruction are given the students in the engine laboratory and test stands. Eight hours are devoted to ground gunnery and six hours are devoted to ground bombing. A review of aerial and sea navigation is allotted five hours, while four hours are given to aircraft communications and radio instruments. Half an hour daily is devoted to radio practice with the key and buzzer.

Upon completion of the advanced flight training course, all student aviators are examined professionally as a final check in determining their fitness for appointments as ensigns in the Naval Reserve. The scope of the examination

includes all the work covered in the preliminary ground school course, together with the course covered during the advanced flight training, according to the syllabus. In the future, these examinations will be conducted at the naval air station at Pensacola before the students leave at the conclusion of the 45 day training period.

The commissions granted the men who successfully complete the aviation course appoint them ensigns "for aviation duties in the Fleet Naval Reserve of the United States Navy." As in the regular Navy, these commissions remain in force "during the pleasure of the President of the United States."

Formerly, each graduate also received a designation as a naval reserve aviator. Under a new ruling of the Navy Department, however, the newly graduated ensigns will not be granted aviators' designations until they have "flown *alone* in heavier-than-air craft not less than 75 hr." and until they have "flown in heavier-than-air craft a total of not less than 200 hr."

This ruling of the Department brings the requirements for the Reserve into conformance with those of the Regular Navy, which are specified by law. The ruling also provides that the student beginning the primary flight course will be designated a Student Naval Aviation Pilot. This designation is to be retained, unless otherwise revoked, until the student is appointed an ensign. The designation will be terminated upon the acceptance of the appointment as an officer. The student is redesignated then in accordance with his flight accomplishment.

*A picture of Lieut. Comdr. Harold W. Scofield, U.S.N.R., who occupies the position left vacant in the Bureau of Navigation by the late Lieut. Comdr. Noel Davis, taken during his student days at Pensacola.*

"If he has fully complied with the flight requirements of the act, his designation will be as a Naval Aviator," says the order issued by the chief of the Bureau of Navigation, which refers to an act passed by the Sixty-ninth Congress in which the term "naval aviator" is defined and its application described.

"If he has not complied with the flight requirements of the act, he will be designated a Student Naval Aviator. In this latter case, he will receive his designation as a naval aviator when he has completed the time in the air necessary for such designation."

Successful completion of the course does not mean the end of all training so far as the reserve ensigns are concerned. Upon being commissioned officers, they are assigned to reserve aircraft squadrons for further instruction. Under the present naval reserve organization bill, there are 10 of these squadrons, commanded in most instances by reserve aviators, who served with the Navy during the World War.

Each squadron is separated into divisions. "Drills" are held


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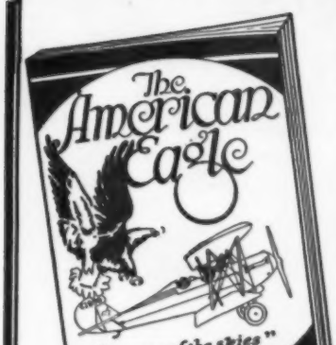


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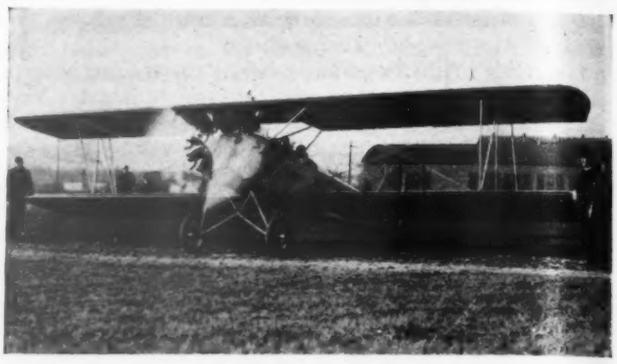
once a week at their headquarters by each of the divisions. In the case of aviation divisions, departmental officials explain, drills are in reality nothing more than periods of three hours for study. Thus the fliers go on with their training in navigation, engines, scouting and other subjects pertaining to aviation and its relation to the Navy.

Headquarters of the reserve aircraft squadrons are located for the most part at naval air stations or at the naval reserve bases. Two of these squadrons have their headquarters at Squantum, two at Rockaway Beach, one at Great Lakes and another at Sand Point. Other squadrons and divisions have headquarters at the naval aircraft factory in Philadelphia and the naval air stations at Pensacola, Hampton Roads, San Diego and Anacostia. Headquarters for the remainder



*An "NY" plane warming up at the Naval Reserve Aviation base at Great Lakes.*

are in Detroit, Minneapolis, St. Louis, Los Angeles and San Francisco.

In addition to the drill periods, the reserves are allowed to spend 15 days a year on active duty at one of the reserve aviation units or at a regular naval air station as a means of further maintaining efficiency. Here, they are trained in flying the later and faster types of service planes. In the majority of cases it has been found that these officers are not satisfied with but 15 days' active duty. Most of them request longer training periods. It is a common occurrence also to find a dozen of them at the various reserve bases each week-end throughout the year, "just getting in a little flying time."

"So far we have made only a beginning in the training of squadrons as such," another officer attached to the Bureau of Navigation conceded. "However, our training of students is working out exceptionally well. We are now making an effort to distribute flight equipment to our various squadrons so that they will have a home place and planes of the proper type to fly. There is every indication that we shall accomplish this in part during the coming summer."

While the work of furnishing the squadrons with equipment progresses, Navy Department officials have not been asleep. They realize that to obtain the greatest amount of good from the equipment supplied, the reserve aviators must be indoctrinated in present-day aircraft maneuvers and tactics. They must learn also the relation aviation bears to the Navy under the present doctrine.

With this in view, 50 of the reserve aviators, commissioned since 1923, are now performing a year's training duty with the fleet. This training began July 1 last year. Twenty-four of these officers are assigned to observation squadrons, 11 to torpedo and bombing squadrons, 10 to general utility squadrons and five to fighting squadrons. These figures are the showing of official Navy records. When the year is completed these men are expected to be well qualified for the training in squadrons which is to follow. It is explained that this system in all probability will be continued indefinitely. Reports received by the Bureau of Aeronautics from the various stations, ships and squadrons to which the reserves are

attached show that so far the arrangement is a success.

The present naval reserve is an outgrowth of the older "naval reserve force". It was created under the provisions of an act of Congress approved Feb. 28, 1925, which became effective July 1 of that year. There are three classes provided in the present naval reserve. The letter "F" after the name is used to designate a member of the Fleet Naval Reserve. Merchant marine naval reserves are designated by the letter "M", while a "V" appears in the official records after the names of those belonging to the Volunteer reserve.

Under each of the three divisions, a number of classifications are provided. The letters "D-F" designate an officer of the deck force, who is a member of the Fleet Naval Reserve. The letters "E-F" are used to distinguish an officer in the fleet reserve assigned to engineering duties. In each classification, the first letter denotes the type of duty which the officer is qualified to perform, while the second letter tells whether he is a member of the fleet, merchant marine or volunteer reserve. Graduates of the reserve aviation course receive the designation "A-F", indicating that they are aviation officers of the fleet reserve.

Deck officers, engineering officers, officers qualified for both deck and engineering duties and aviation officers are considered officers of the line and wear the same uniforms as those prescribed for officers of the corresponding rank in the line of the regular Navy. Officers of the supply and medical corps wear the uniform with the insignia of their branches

*Air view of the U. S. Naval Training Station at Great Lakes, Ill. 1. The landplane field. 2. The parade ground of the training station. 3. The seaplane beach and the harbor.*

of the service. Upon completion of the aviation course and appointment as ensign (A-F) U.S.N.R., each man is paid a gratuity of $100 for the purchase of the required uniforms.

Members of the naval reserve are to wear the uniforms of their ranks and ratings when at drills, the naval reserve regulations specify. The weekly drills or periods of equivalent duty required of aviation officers are required of all members of the fleet reserve. To obtain credit for these drills, the officers and men must appear in uniform. Sixty is the maximum number of drills that may be performed for pay purposes. For the performance of this number, the officers and men are given one day's base pay for each drill.

The yearly 15 day active duty period, which aviation officers perform, likewise is performed by members of the other branches of the fleet reserve. The duty is of course of a different nature. For this service, the officers and men receive the same pay and allowances as are received by those in the regular Navy of the "same rank, grade or rating and length of service." Officers and men "detailed for training

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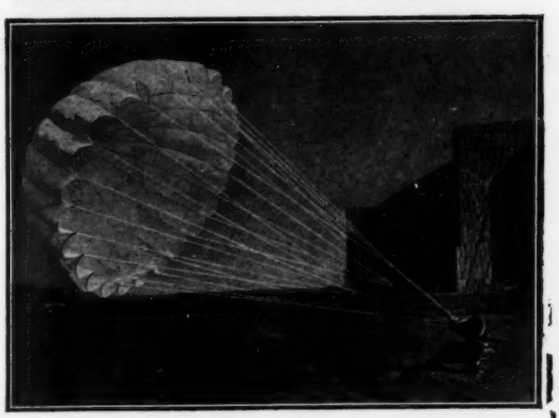

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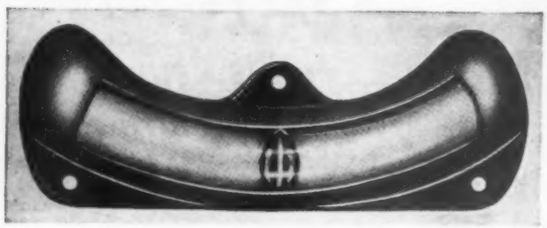

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or other duty in aviation which involves actual flying in aircraft, in accordance with orders issued by the Bureau of Navigation," are entitled to draw 50 per cent. of their base pay in addition. This is known in the service as "flight pay."

Four or more years of service in one grade is required of a Fleet Naval Reserve officer before promotion to the next highest rank. In these four years, the officer must have spent at least 60 days on active duty. Professional examinations are given to determine his fitness for holding the next rank.

In addition to these requirements, an aviation officer must have had 125 hr. in the air as an ensign before he can be promoted to junior grade lieutenant, 125 hr. in the air in this rank before he is eligible for promotion to lieutenant and 150 hr. in the rank of lieutenant before he can be made a lieutenant commander. He must also satisfactorily pass a flight test.

Student reserve aviators are enlisted in the volunteer reserve when they have partially completed the ground training and it has been ascertained that they will in all respects

*Instruction on Wright Whirlwind engines being given at the Rockaway Beach, L. I., Naval Reserve Aviation base. Lieut. John Iseman, commanding officer, is third from the left.*

qualify for flight training. Members of the volunteer reserve are not required by law to perform any training. They may perform drills if they choose, but they receive no compensation. They may be permitted on their own application to perform the same training duty given members of the fleet reserve. For this duty they receive the same pay and allowances given fleet reservists.

"All student aviators must be enlisted as second class seamen and remain in that rating until they receive their commissions as ensigns," instructions issued by the Navy Department provide. "They should be enlisted in class V-2. When students are ordered to primary flight training, they should be transferred from class V-2 to class V-5. They must be provided with the necessary uniforms before they are ordered to a unit for flight training. Inasmuch as they will use the seamen's uniforms not more than two summers, the commandants need not authorize the issue of complete outfits, but only such items as are deemed necessary."

Class V-5, to which the student aviators are transferred before beginning their primary training, is for student aviators enlisted as seamen second class only. In joining the reserve, the prospective student aviator enlists for a period of four years. The transfer to class V-5 does not affect his enlistment. However, the regulations stipulate that "student aviators of class V-5 will be eligible for commissions as ensigns in the Naval Reserve after the successful completion of their course of training."

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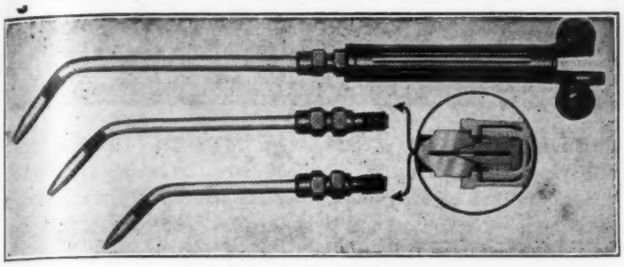

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# SIDE SLIPS

By ROBERT R. OSBORN

As the news may not have reached some of the readers of AVIATION who have been working hard and worrying along all these years in the hope that some day "this airplane business" might be saved and actually amount to something, we hasten to spread the good word. We too, had almost given up, after ten years of tinkering and studying and hoping and barely existing on starvation wages—we were just going to slink back to the old home town and ask for the old job on the ferry boat, when the glad tidings reached us. Boys, we're saved. Ten seniors in the Princeton graduating class have decided to take up aviation as a life work.

• • • •

When this news reached the public through the newspapers Curtiss and Wright stocks soared to new high marks on the New York Exchange. H.H.F., Jr., a graduate of Harvard, who drifted into the office a while ago, claims that this activity in the market is only because of the announcement of Colonel Lindbergh's connection with Transcontinental Air Transport.

• • • •

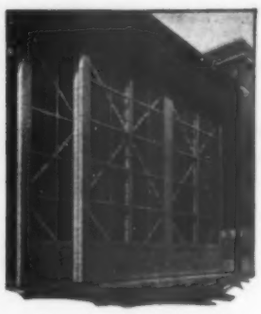
The people who are most puzzled and amazed by the prices investors and speculators are willing to pay for aeronautical stock are the old-timers in the business. The gloomiest ones, —those who sold their holdings in the forties and fifties and some who sold short in the hundreds and hundred-and-fifties, claim that this is the first time in aeronautical history that an altitude record and a duration record have been set at the same time.

• • • •

A racing car was recently tried out, on a German race-track, using for propulsion a number of rockets mounted on the chassis of the car, the rockets being ignited in rapid order by the driver. As a speed of 130 m.p.h. was obtained and the experiment appeared to be successful in every way, the inventor is now planning to put the same power device in an airplane. He predicts that with such a machine flights from Berlin to New York will be made in two and a half hours, this accomplishment to be realized in ten years or so. If we were running the rocket ship on the first attempt to make this flight, and we are willing to bet anybody at any odds that we won't be, it would be just our luck to get in mid-ocean and have our faithful cigarette-lighter fail to light for the first time in history, preventing us from touching off the rockets necessary for the rest of the trip. The gift cigarette-lighter has been working so faultlessly thus far, we are not afraid to bring it out in crowds of five or more, and we are suspecting it of lulling us into a sense of security so that it can fail to light at a really serious time.

• • • •

Mr. F.P.A., esteemed columnist of the *New York World*, has suggested that the pajamas loaned to Colonel Lindbergh by Ambassador Herrick on the night the famous New York-to-Paris flight was completed, should be placed in the Smithsonian Institution. The suggestion is a good one, if there could be some assurance that the old-fashioned night shirt would not be more prominently exhibited and identified with the placard, "This night shirt is, in the opinion of many competent to judge, the first man-carrying article of clothing capable of sustained free slumber on the part of Colonel Lindbergh after his New York to Paris flight, which could have been made in the Langley Aerodrome."



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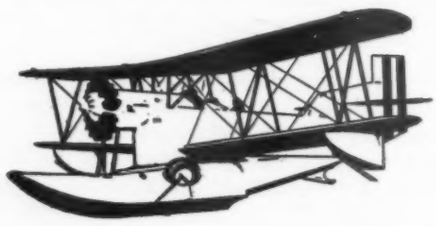

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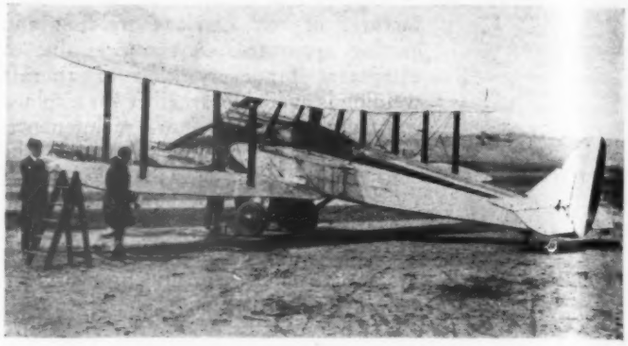
# FOREIGN NEWS

*By Special Arrangement with the Transportation Division Bureau of Foreign and Domestic Commerce*

## *Sets Load Record in DH "Hound"*

Flying a DH "Hound", Hubert Broad recently established a new record in England when he maintained an average speed of 160.861 m.p.h. with a load of 1,000 kg. (2,204 lb.) of lead. He flew from Stage Lane Airdrome, Edgeware, to Reading and back, a distance of more than 62 mi., in 23 min. 10 sec. The Hound plane is powered with a 550 hp. Napier Series XI engine.



*The DH "Hound" at the Stage Lane Airdrome shortly before the record flight.*

Broad's record breaks the mark set by M. Lasne of France, who in 1925 flew a Nieuport-Delage 42C-1 powered with 500 hp. Hispano-Suiza engine over a specified course and with the required load at an average speed of 153.039 m.p.h.

## *Nearly 400 Acres at Croyden*

London's reconstructed Croyden Airport will cover nearly 400 acres, according to a report from Trade Commissioner William M. Park at London, who states the airport is now nearing completion. More than $1,000,000 has been spent.

Among the principal features of the new airport is a large main building with a 250 ft. frontage, housing the Air Ministry's administrative offices and the various British and foreign air companies using the airdrome. To the left of this building are the huge airplane hangars, which are 300 ft. long, 150 ft. deep, and with sliding doors 30 ft. wide. Together they can accommodate 35 of the largest passenger airplanes in use today. Behind these hangars are up-to-date work shops and repair sheds. On the right side of the administration buildings is the new hotel containing 50 bedrooms, most of them with bath, for the use of air passengers arriving late at night or departing early in the morning.

## *Luft Hansa Begins Plane-Boat Service*

With the recent arrival of the North German Lloyd liner *Columbus* at Bremerhafen, the Luft Hansa's new airplane-boat service began. The plane met the boat, took passengers aboard, and flew to Berlin, arriving fully seven hours ahead of the train. An eight passenger plane was used to inaugurate the service.

## *De Pinedo Leading Seaplane Fleet Cruise*

A cruise of the western portion of the Mediterranean including stops at Barcelona, Carthagena, and Cadiz is being conducted by Comdr. Francesco de Pinedo of Italy. A fleet of 58 seaplanes are carrying more than 200 persons on the cruise, it is reported.

# AIRPORTS AND AIRWAYS

## *Elko, Nev.*

*By Robert Blackstone*

Elko, a refueling stop on the transcontinental airway between Salt Lake and Reno, has a municipal airport less than a mile west of town and right off Victory Highway. At first an east-west runway of 2700 ft. was leveled, but that is now being increased to a mile. The north-south runway is 1700 ft. and is being increased to 2100. The prevailing wind is west.

The field has an 80 x 100 ft. hangar which can house five planes. Gas and oil and minor repairs can be had at the field as well as the service of two mechanics.

R. W. Baker and R. C. Hukford, Department of Commerce radio operators, furnish weather reports and receive and transmit radiograms of arrivals and leaving of airplanes. Baker is in charge of the radio station. He is a former mechanic with seven years experience in that line. He was recently promoted to his present position when C. W. Larsen was transferred to Concord, Calif.

J. L. Farrow is in charge of the field for the Boeing Air Transport Co. W. C. Wignall, mechanic, and Farrow take care of all repairs.

On a little hill back of the Elko field the Department of Commerce is erecting a 75 ft. tower for a beacon. Elko will also have a radio beacon when night flying begins.

The Elko-ites are proud of the fact that they are on the transcontinental airway and demonstrate it every time they

*Boeing Air Transport plane refueling at the Elko Airport. Field Manager J. L. Farrow, left, and M. C. Wignall, mechanic, right.*

get a chance, by making improvements suggested by airway extension engineers. The city immediately agreed to install boundary lights, and lengthen the runways. This latter necessitated the buying of more land.

## *Little Rock, Ark.*

*By Joe Harry Weston*

A special committee, to investigate the possibility of the establishment of an air mail route through Little Rock, was recently appointed by W. C. Ribenack, president of the Little Rock Chamber of Commerce. Rumors of the possibility that Little Rock might be named as one of the stations on the proposed airline from Cleveland and Louisville through Memphis and Little Rock to Dallas, have been circulating here for several days. The duty of this committee will be to trace down the rumors, and find what inducements must be offered to gain the line. Members of the committee are as follows: William A. McDonnell, a banker, chairman; J. A. Ginnochio, postmaster; J. Carroll Cone, commanding officer of the 154th Observation Squadron, Arkansas National Guard; Maj. Robert Coker, commanding officer of the Little Rock Intermediate Air Depot; Lieut. S. L. Willitts, Department of Commerce aircraft inspector, and Robert Williams.

The first of a series of cross-country flights in his campaign for governor of Arkansas was made recently by Maj. J. Carroll Cone, commanding officer of the 154th Observation Squadron, Arkansas National Guard, and present auditor of the state, to Walnut Ridge, Ark. Major Cone was flying an American Eagle plane donated to him for the purpose by the Felix Smart Motor Co. of Pine Bluff, of which he was formerly sales manager. He says he plans to make a flight to the main town in each of the 75 counties in Arkansas, if it affords enough level space for him to land his plane upon.

## *St. Louis, Mo.*

*By M. L. Alexander*

St. Louis has been selected as the first week-end stop of the more than 40 airplanes which are to compete in the Ford Reliability Tour. The planes are scheduled to arrive at Lambert-St. Louis Field on the afternoon of June 30 from Indianapolis and will depart on July 2 for the rest of the 6,000 mi. tour. At least two St. Louis made airplanes are to be entered. It is understood that a Ryan Brougham entered in the competition will be piloted by Philip R. Love, flying mate of Colonel Lindbergh in the Army and air mail service and his escort on the Guggenheim nation tour. The other St. Louis plane, a Curtiss "Robin", is still without a pilot.

Maj. Albert Bond Lambert, dean of St. Louis fliers will be in charge of the field for the Ford tour, assisted by T. Preston Sultan, World War ace who is now Phil Love's partner in a firm of airport consultants. A fund of $8,000 is to be raised by an Air Board committee headed by Oliver L. Parks, to defray the expenses of the Ford event.

### Ford Tour Pathfinders Arrive

Ray Collins and Ray Cooper, the pathfinding expedition for the Ford tour, stopped off at St. Louis recently in an Army Fokker piloted by Lieutenant Stance. They expressed themselves as pleased with preparations made here for the tour.

Eighteen P-1's of the First Pursuit Group dropped in at Scott Field recently, en route from the spring maneuver at Fort Leavenworth to the home station at Selfridge Field, Mich. The planes, flying in formation and headed by Capt. Frank H. Pritchard, preceded 10 two seaters of various types, which came in singly. A passenger in a Falcon was Brig. Gen. Frank Parker of the General Staff. He was piloted by Maj. John B. Brooks.

Jack Merrell—"Lucky Jack" he calls himself—had a narrow escape when he parachuted down into a maze of trolley wires at Parks Airport in a recent Sunday flying exhibition. The chute folded over trolley and guy wires and the short-circuited line sparked viciously while Merrell hung in his harness with his feet six feet from the ground. After some minutes he was released by other fliers who brought a ladder and held it for him while he unbuckled his harness and climbed down.

Lieut. Julius Johanpeter, who has given the 35th Division Air Service's new Falcons more hard work than any pilot in the squadron, has joined the instruction staff of Robert-

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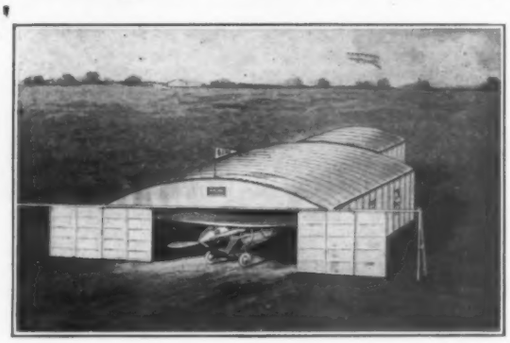

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son Flying Services and is now spending most of his day in OX-5 planes. Johanpeter's running mates are Ray Fortner, and Dan Robertson, who is chief pilot.

One of the squadron's Falcons was flown cross-country to Washington and return recently by Phil Love.

## *Kansas City, Mo.*

*By H. H. James*

The visit of the giant Western Air Express plane created much interest on its visit to Kansas City on its way from the Fokker factory at Hasbrouck Heights, N. J., to Los Angeles. The plane, one of the three from the factory to the West Coast on different routes, landed at the Kansas City municipal airport. Officials of the Western Air Express, an Army observer, newspaper reporters, and others, were passengers on this plane. Several thousand persons visited the airport to view the $78,000 plane.

Matthew S. Murry, director of public works at Kansas City, with Lou E. Holland, former president of the Advertising Clubs of the World and also the Kansas City Chamber of Commerce, have been on a tour of inspection of airports in the leading cities of the East with a view of making recommendations as to improvements needed here. They flew from Kansas City to Detroit, going by way of Chicago. They traveled 1,001 mi. in 10 hr. and 2 min. Stops were made at St. Joseph, Mo., and Moline, Ill.

### Surprised by Amount of Night Flying

Eric Hildesheim, pilot of European passenger air lines flying between Copenhagen, Denmark, and Paris, has been in Kansas City for an inspection of the municipal airport here and to study aviation equipment used by commercial lines. Mr. Hildesheim made the trip here from Chicago in a regular National Air Transport mail plane. He expressed surprise at the amount of night flying in the section and throughout the United States.

Air Mail Week was observed in Kansas City with several pilots, mechanics and officers of the air mail line operation in this section—National Air Transport, Inc.—being the guests of the Chamber of Commerce at a dinner.

The Sweeney School of Aviation, Kansas City, has purchased two new planes for use in training students. One is a Waco 10 and the other an Eaglerock. A total of 115 students now are enrolled in the Sweeney school. Glenn Quinn is chief instructor and E. L. Campbell and D. L. Boone, training pilots.

Three new students enrolled the last few days in the Bennett Flying School, Kansas City. They are George Jeter, T. M. Martin, and H. A. Edgecomb. The Bennett school's commercial planes set a new record for paid passengers recently when they carried 117 persons on sightseeing tours.

### First Electric Sign Advertising

Kansas City soon is to have its first electric sign advertising commercial air lines. The Ni-Sun Lines is having a sign placed on top of the Westgate Hotel, in the downtown business district. The sign has 184 electric lamps.

The National Air Transport officials at Kansas City report that more passengers are being carried each week on the mail planes operating out of this point. The planes of the company in exclusive passenger service also are carrying more passengers.

Improvements at the Kansas City municipal airport, costing $70,000 or more, probably will be made at once. The improvements will include two hangars, 80 x 100 ft., for lease to commercial air lines. The $1,000,000 bond issue for the purchase and improvement of the airport was defeated in the recent election by a narrow margin, due to the fact

they were on a ballot with many other proposals that were unpopular. However, the proposal probably will be submitted again this summer and in the meantime the city plans to go ahead with improvements at the field.

## *Springfield, Mass.*

*By Charles Hanson Gale*

Springfield's greatest aviation rally occurred recently when Secretary MacCracken, Count Igor Sikorsky, Maj. Gen. John F. O'Ryan, president of the Colonial companies, and Otto Scherer, chief engineer of the Junkers Corporation, appeared at the annual banquet of the local Publicity Club.

A new era in local aviation was said to have started as a result of the new conceptions derived by the 400 who crowded into the Hotel Kimball ball room where the event was held. Secretary MacCracken emphasized airports, General O'Ryan spoke on progress in air transport, and Sikorsky spoke on modern and future aircraft designs.

One of the primary purposes of Secretary MacCracken's visit was to inspect the site proposed by Congressman Henry L. Bowles of this city for development as the city airport. The tract had been inspected by Lieut. Philip R. Love, and MacCracken's word that it was capable of being developed into an A1A port was awaited as the final approval of the project.

He declared the Bowles tract at Agawam to be ideal and entirely suited for A1A development. MacCracken landed at the Barnes Airport at Westfield in a plane piloted by Francis Collins. The trip to this city was made by motor.

General O'Ryan came here by train and had lunch at noon with a group interested in the development of the Fisk Park Airport for this city. This project is being backed by the Springfield Airport Corp. The general made an inspection of the field in the afternoon and expressed satisfaction with it. The Colonial planes are expected to land there when the Boston-Buffalo-Cleveland service has been pushed through.

Sikorsky arrived in a twin-engined amphibian and landed on the Connecticut River. With him were Arnold Dickinson and H. R. White, pilot. The next day a large number were taken for flights over the city and up the valley and when it left here it carried Louis E. Bauer, president of the Indian Motorcycle Co. of this city and his son Charles A. Bauer. Both are members of the Flying Club of Springfield.

A new Travel Air bought by the Flying Club of Springfield from the Interstates Airways of this city and Hartford, was delivered recently and solo and instruction time was started as soon as it had been checked over. The plane will be cared for by mechanics of the Springfield Airlines, Inc., and will be housed in the hangar of that company.

## *Portland, Ore.*

*By John W. Anderson*

Portland will soon have, at some high point about the city, one of three new rotating aviation beacons being installed on the coastwise air route by the Standard Oil Company, according to announcement here.

The guide will be 10,000,000 candlepower, mounted on a 75 ft. steel tower and will be marked with neon lights to identify the city. Two such beacons have already been installed at Mount Diablo and the Mercedes Hills of California, and the other new towers are to be at Seattle and San Diego.

Local aviation authorities and the airways division engineers of the Department of Commerce will be consulted as to the exact site of the light.

The new passenger air line between Portland and Yakima, Wash., has been in operation since May 15 under the guidance of Tex Rankin and his pilots. The plane used is a Ryan Brougham, carrying the pilot and four passengers. The service is appreciated most of all by the Yakima fruit men who have hitherto spent much time making the train connec-


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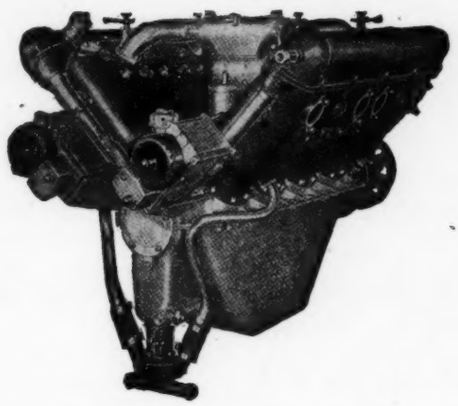

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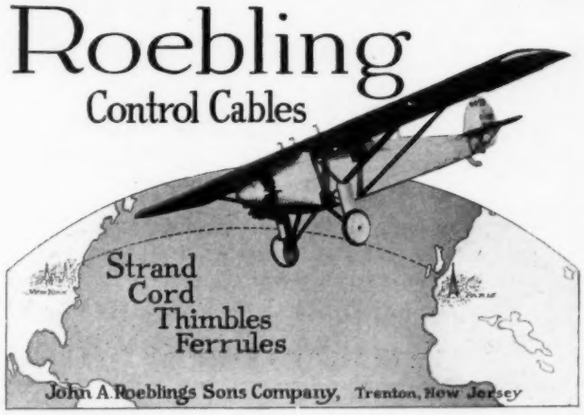


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tions. Two hours is the time elapsed between the two cities.

An entire convention delegation recently flew from Seattle to this city to attend a conclave of the West-Made Desk Co. The representatives reserved all the space for the day in the West Coast "Cascadian".

Another group of convention-goers, the Metropolitan Life Insurance salesmen, used the same plane to go to a recent Tacoma, Wash., meeting.

## *Washington, D. C.*

Two Boeing PW-9 pursuit planes, each equipped with the Curtiss D-12 engine of 400 hp., landed at Bolling Field, Washington, D. C., May 16 after a 3,820 mi. flight from France Field, Panama Canal Zone, which was negotiated in 35 flying hours spread over four and one-half days of flying. The flight is regarded in aviation circles in Washington as being the longest cross-country trip ever attempted and successfully accomplished by standard service pursuit craft.

Piloted by Lieut. Robert W. Douglas, Jr., and Lieut. James E. Parker, the planes, which have been flying at France Field for the past two years, left the Zone Saturday morning, May 12, and flew to Managua the first day where the night was spent with the Marines in Nicaragua. The second overnight stop was made at Minatitlan, Mexico, the third at Kelly Field, San Antonio, Tex., and the fourth at Wright Field, Dayton. The two pursuit pilots did not leave Wright Field for Washington until late in the afternoon of May 16.

The purpose of the flight was two fold: to develop an airway between Texas and the Canal Zone, which already had been blazed by the Pan-American Fliers, Col. Charles A. Lindbergh and F. Trubee Davison, assistant secretary of War for aviation and Maj. Gen. James E. Fechet, chief of the Army Air Corps, and second, to bring the two pilots to "the States" to participate in the annual machine gun and bombing matches at Langley Field.

"We had wonderful planes and wonderful engines," Lieut. Douglas, a classmate of Colonel Lindbergh's at the Air Corps training center told AVIATION'S representative on landing at Bolling Field. "We encountered only one or two brief periods of delay and this was due to the difficulty in getting fuel. The Nicaraguan and Mexican people were hospitable and did all in their power to make the flight a success." The worst country flown over, Lieutenant Parker said, was between Guatemala and Minatitlan. "There was no civilization whatever below us," he said, "and aside from this area, the rest of the journey was very enjoyable."

Although the planes have been put to a severe test, they will participate in the machine gun exercises at Langley Field against Army planes from various posts throughout the country.

## *Toledo, O.*

*By David B. Hoag*

Construction of a steel and brick hangar on Toledo's new transcontinental airport has been completed. It is to be furnished with the most modern equipment and is amply large to house the largest types of commercial planes.

Beacon lights have been installed under direction of F. H. Tower of the Department of Commerce, who also is supervising the installation of seven beacons on the mail route between Vickery and Bryan, O. Contract for the installation of 52 flood lights has been awarded. The field will be fenced on three sides with provision made for auto parking near the highway. Recent announcement fixes the opening date about June 15.

Stockholders of the Fremont, O., Airways Corp. have authorized erection of a hangar on its flying field at Rainbow Gardens. Work has been started. Directors of the company are: A. R. Christy, D. LaMar Christy, Larry G. Post, Harry

Gottron and Homer W. Johnston. The latter is a former Army and air mail pilot and will fly the new plane which the company has purchased.

Port Clinton, O., has painted its name on the roofs of factory buildings in both the east and west sections of the city. Bucyrus also has labeled itself in letters 25 ft. high painted on the roof of the Central High School in that city.

## *Memphis, Tenn.*

*By Clarence Bruce*

The Mississippi River has been at work for 100 yr. building an airport site for Memphis. The Memphis Chamber of Commerce Aviation Division has just completed an exhaustive survey of possibilities of use of a river island which has formed in what used to be the Memphis harbor.

"Mud Island" is the unpoetic but descriptive name given to this product of Mississippi floods. It is separated from Memphis proper by Wolf River, a small tributary which empties into the big river opposite the city's business district. The island's widest part, on which the airport will be constructed, is only a mile from the heart of the city. It combines every advantage lacking in airports of most cities having them.

The project will cost $2,250,000 according to estimates of the engineers making the survey. The river is making inroads on the outer side of the island. Revetment work costing $1,000,000 will put a stop to this, and guarantee permanency of the island.

The surface of the island will be raised above flood level by depositing silt dredged from the adjacent river channels, and supplementary grading. Government agencies have pledged their co-operation, materially reducing the tremendous expense of providing a surface high enough for year-round use. Cost of grading alone is estimated at $495,000.

The field itself will be circular, a new departure in specifications for such developments, 3000 ft. in diameter. It will be bowl-shaped, the lowest point directly in the center. This arrangement will aid materially in taking off and in landing, the slope giving added velocity to a departing plane, and helping check incoming machines. The outer rim will serve to keep out flood water. Drainage will be accomplished by a combination of gravity and pumping stations.

The field will be used by air mail, passenger and freight lines, and private machines. It will be about a mile distant from the post office. Mail can be handled as quickly from the Memphis Airport as from either of the city's railroad stations. It is not more than 10 min. by automobile from farthest sections of the business district, and is directly opposite a large section devoted to hardwood lumber manufactures, in which Memphis is a leader.

## *Los Angeles, Calif.*

*By Charles F. McReynolds*

Theodore T. Hull, president of the California Air Race Association, recently left Los Angeles on a flight to Mexico City for the purpose of inviting the participation of Mexican government and civilian planes in the National Air Races to be held in Los Angeles during September of this year.

Mr. Hull, who is vice president of the Pan-American Bank of Los Angeles, is also a licensed transport pilot, and is piloting the Fairchild cabin monoplane on its Mexico City flight. No attempt at a speed record is sought, the sole purpose of the flight to arouse interest in the coming air races, not only in Mexico City, but in every town visited along the route.

The tour is expected to last about three weeks and will include many important towns of the Southwestern United States as well as most of those in Northern Mexico.

W. T. Robinson, formerly chief instructor of engines at Brooks and March Fields and well known in Army flying

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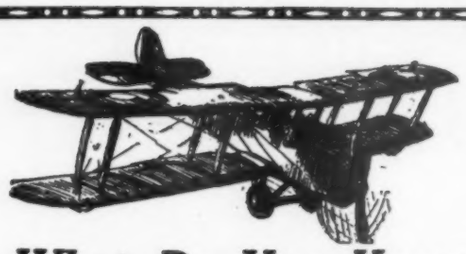

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circles, has taken the position as chief of engine instruction for the Warren School of Aeronautics, Los Angeles.

Following a request from the Guggenheim Foundation for the Promotion of Aeronautics, Anton Deraga, noted meteorologist and Southern California aviation enthusiast, has set to work organizing meteorological observation stations along the Los Angeles to San Francisco air route.

Pacific Air Transport and Maddux Air Lines are now operating planes daily over this route and with the entrance of Western Air Express into this service it is planned to send out weather reports by radio from intermediate stations to the planes in flight.

## *Galesburg, Ill.*

*By Jerome T. Little*

The City of Galesburg, after considering several airport sites near the city, has decided to lease for one year a 63 acre tract with the option of buying it at the end of the year for $20,475. This tract is advantageously located along a new state road between Galesburg and Moline, Ill. It is about one and a half miles north of the business section of the city on the same road as the City Park and the proposed Santa Fe Reservoir. The site was finally decided upon after aerial photographs had been taken by photographers from Chanute Field, Rantoul, Ill., and also consulting W. O. Snyder of the Aeronautic Branch of the United States Department of Commerce. Snyder did, however, advise a field twice the size selected, but the City Airport Commission feels that it can, at a later date, annex sufficient ground to increase it to that size.

S. W. Rayl of this city, a director of the National Airways System of Lomax, Ill., builders of the Air King, has leased a 60 acre tract east of the city and is building hangars on it to house several planes. A competent pilot will be obtained and a commercial flying business and air school started at this port.

## *Dallas, Tex.*

*By Rorie E. Cowden*

The Dallas Chamber of Commerce is making an extensive campaign to encourage the use of the air mail. It is their desire to increase the air mail poundage for the two lines already operating in order to attract other lines to Dallas and the Southwest. Several such lines are contemplated. The campaign is being carried on by both personal contact with the business men and also by the use of letters to all members of the chamber of commerce.

L. A. Winship, manager of Southern Airways, returned from the Swallow factory recently with a new OX-5 Swallow which was delivered to The Fairchild Aerial Survey, Southwest Division. They have placed an order for a Hisso Swallow. Mr. Winship says that he placed orders for two other Hisso Swallows which will be delivered in the near future. Orders were placed with five different supply houses for engines and parts.

## *Menominee, Mich.*

An airport to be used in connection with the Menominee Airport is being hewn out of 80 acres of timber on Chambers Island, 14 mi. from the Menominee shore, by lester Nebel of Sturgeon Bay, Wis. The island, which is four and one-half miles long by three and one-half miles wide, has been developed into a summer resort at a cost estimated at several million dollars.

The airport must be ready within 30 days, and E. R. Thompson, Chicago, one of the resort promoters, said that the island association would have two or three Ford all-metal planes for service between Chicago and Menominee, or directly to the island when conditions were favorable. The

island airport will have two runways, 2,800 ft. and 3,000 ft. long, respectively. The field will adjoin the mile-square lake on the island which will be used for seaplane landing. In a test flight recently a round trip between Chicago and the island was made in five hours.

## *Boise, Idaho*

Walter T. Varney, air mail contractor on the Salt Lake-Boise-Pasco airway, with Mrs. Varney and other relatives and friends, recently visited Boise on an inspection tour of the Varney Air Lines. From here the party continued on to Butte, traveling in a seven passenger sedan.

Varney will soon make the flights here from San Francisco in a new three passenger Stearman plane he has ordered. The trip will then require but six hours, states Charles T. Wrightson, business manager of the Varney Air Lines. The Varney company is now using four Stearmans in flying mail from Salt Lake City to Boise.

Official announcement that Boise has been selected as a stopping place for the first "American air tourists", and that they are scheduled to arrive here on the afternoon of July 12, was received recently by the Boise Chamber of Commerce. This caravan of planes will carry approximately 200 tourists over 7820 mi., stopping at 32 cities.

## *Schenectady, N. Y.*

Construction of a second hangar at the Schenectady Airport will be started immediately, according to an announcement by Capt. James A. Walsh, a director of the airport. The building will be of brick and steel construction.

The first hangar on the airport, built some months ago, was filled to capacity a few weeks after completion, making necessary the erection of a second building to meet present demands.

Erection of a third hangar is being planned by Colonial Western Airways, Inc., holder of the Albany-Cleveland air mail contract, for their use. Plans for the building, to be a model type, incorporating several innovations of design, are now being drafted by engineers of the American Airports Corp.

The new building will provide for the utilization of all possible space. In addition to a storage area and shops, there will be accommodations for classrooms for pilots' instruction and other features.

## *Fair Haven, N. Y.*

Pilots following the south shore of Lake Ontario are invited to drop in and look over the new airport here. It is located one mile south of Fair Haven Bay and the village of Fair Haven. The field can be easily located from the air as there are two runways, one east and west 1000 ft. long and the other south-east by north-west 2000 ft. long. Prevailing winds are from the north and north-west.

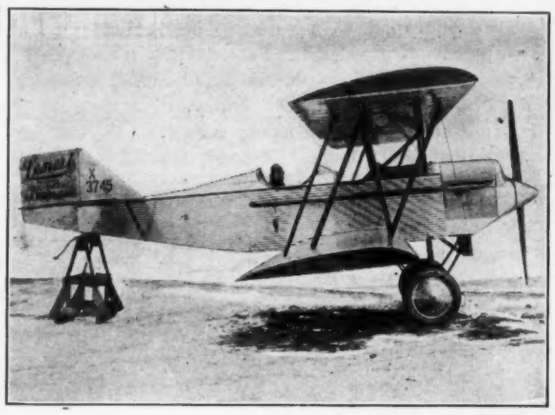
At the present time the only plane on the field is the Air King owned by R. L. Acker. From the enthusiasm shown by the people in this section it is expected that more planes will be added soon.

## *Oklahoma City, Okla.*

*By Ernest W. Fair*

H. C. Martin, local aviation booster and chairman of the chamber of commerce aviation committee for some time, has given a cup to be awarded the winner of second place in the model airplane building contest now being conducted by the *Daily Oklahoman*. First prize is to be a free trip to Detroit, Mich.

Oklahoma now has 42 air fields. These, listed here because they may be of aid to fliers reading this, are: Ardmore, Bartlesville, Blanchard, Chandler, Chickasha, Cleveland, Drumright, Clinton, Duncan, Enid, Fort Sill, Hennessey, Henryetta, Kingfisher, McAlester, McLoud, Miami, Mus-

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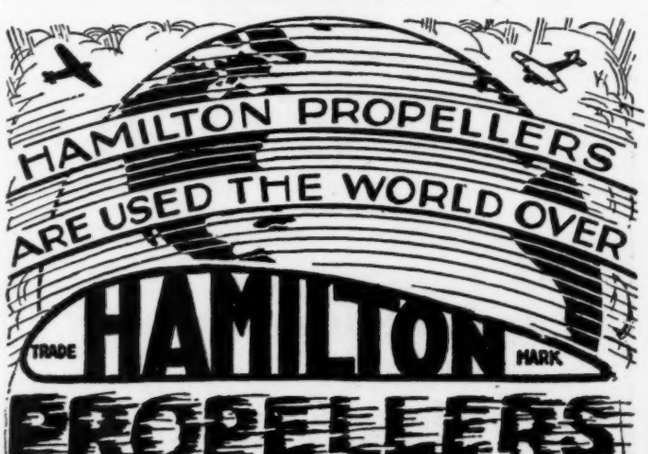


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kogee, Norman, Okmulgee, Texola, Tishomingo, Tulsa, Wagoner, and Walters, besides Oklahoma City's municipal port. Eleven are equipped with rotating beacons and partial or full equipment of floodlights for landing. These are: Bristow, Coalgate, El Reno, Guthrie, Holdenville, Newkirk, Oklahoma City, Westwood, Pauls Valley, Shawnee and Woodward. Intermediate fields along airways, marked or laid out are at Blackwell, Crider, Edmond, Healdton, Pernell, and Perry.

## *Norman, Okla.*

*By Ernest W. Fair*

The Oklahoma State Air Tour was received here with a large welcome by Norman citizens at the University of Oklahoma. Dr. W. B. Bizzell, president of the university, and his wife were given their first airplane rides in a Ford-Stout plane used on the tour. They are now enthusiastic boosters of aviation.

A marker has been built at the air field. The regulation design centered about an inverted L is 2,500 ft. long with a 1,500 ft. base. A round white bed of chat 100 ft. in diameter is at the corner of the L. Around this is a four foot dark border making the complete circle 108 ft. in diameter. An 18 ft. arrow with a six foot spread at the head points north across the white chat. Near the arrow and leading from the east are the words "American Legion", "Post 88" and "Norman", spelled in 50 ft. letters. Roy Hunt, vice president of the Oklahoma Air Transport Co. and member of Tau Omega, is chairman of the marker committee in charge.

## *Hector, Minn.*

An American Eagle has been purchased by I. R. Hable to be used in carrying on the customary flying activities at the local field, which is called the South View Airport. Glenn Clark is associated with Hable in the management of the field, on which there is a hangar with a capacity of two planes. When the American Eagle arrived in town, it was greeted by a large crowd led by the Hector band that had marched to the field south of town and C. L. Corson extended the greetings of the community in behalf of Mayor Griffin.

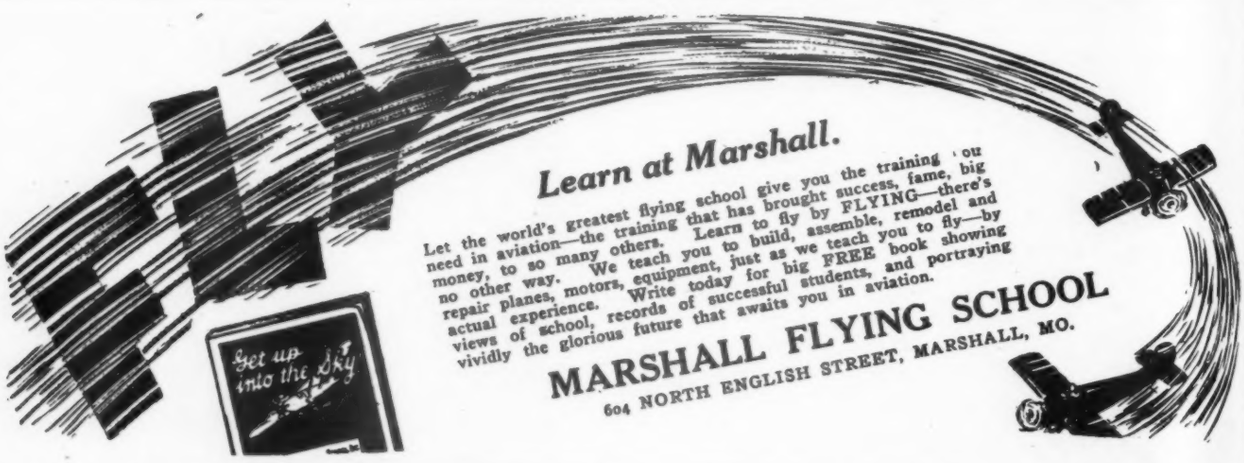
## *Waseca, Minn.*

H. F. Deichen recently piloted a Waco, from which copies of the *Waseca Journal* were delivered to the surrounding towns including Meriden, New Richland, Janesville, Waldorf, Alma City, Pemberton, Matawan, and Otisco. No stops were made en route during the 70 min. trip for the well protected bundles of newspapers were dropped by William S. Gibson, field man for the *Journal*, at the towns mentioned in addition to 14 rural schools, where the teachers with their pupils were waiting for the "news-boy" travelling in the air. The approximately 90 mi. trip was made to boost the interest in aviation as well as to build good will for the *Journal* and Waseca. Two of the neighboring towns have expressed their desire to provide adequate landing facilities, as a result of the trip.

## *Monroe, La.*

The roof of the Ouachita National Bank, a 12 story building in the city of Monroe, La., has been painted with name "Monroe" and an arrow pointing to the new Selman Field, three miles due east of the building. This marking is illuminated.

Selman Field is taking the place of Smoot Field which has been abandoned. The new field is rectangular in shape, is equipped with a brick hangar 60 x 100 ft., with service facilities, transportation to city, telephone, etc. It is to be under the management of Lieut. Harold R. Harris, chief test pilot of the U. S. Army during the war, formerly stationed at McCook Field, Dayton, O.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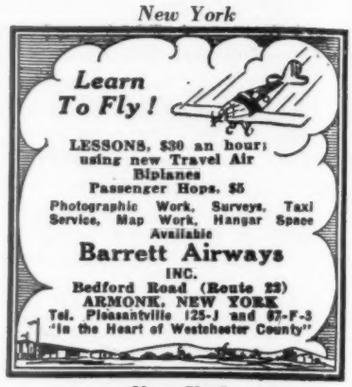


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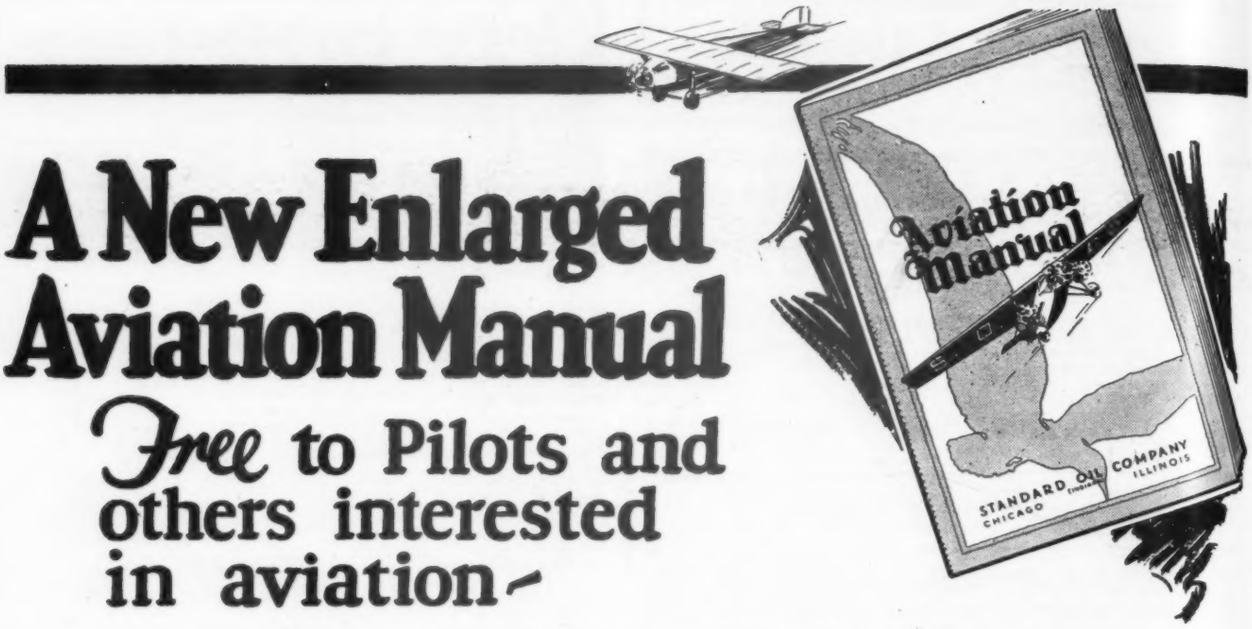


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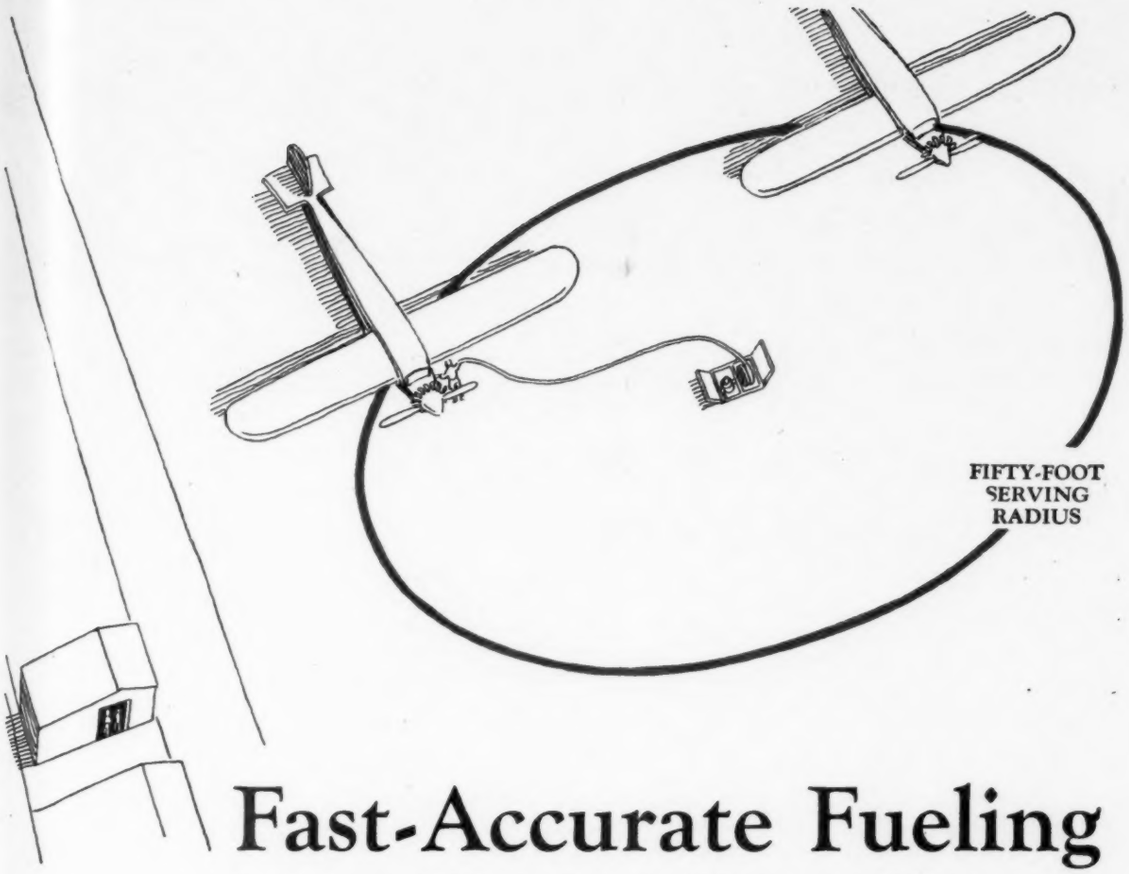


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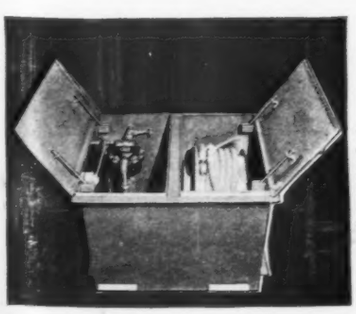

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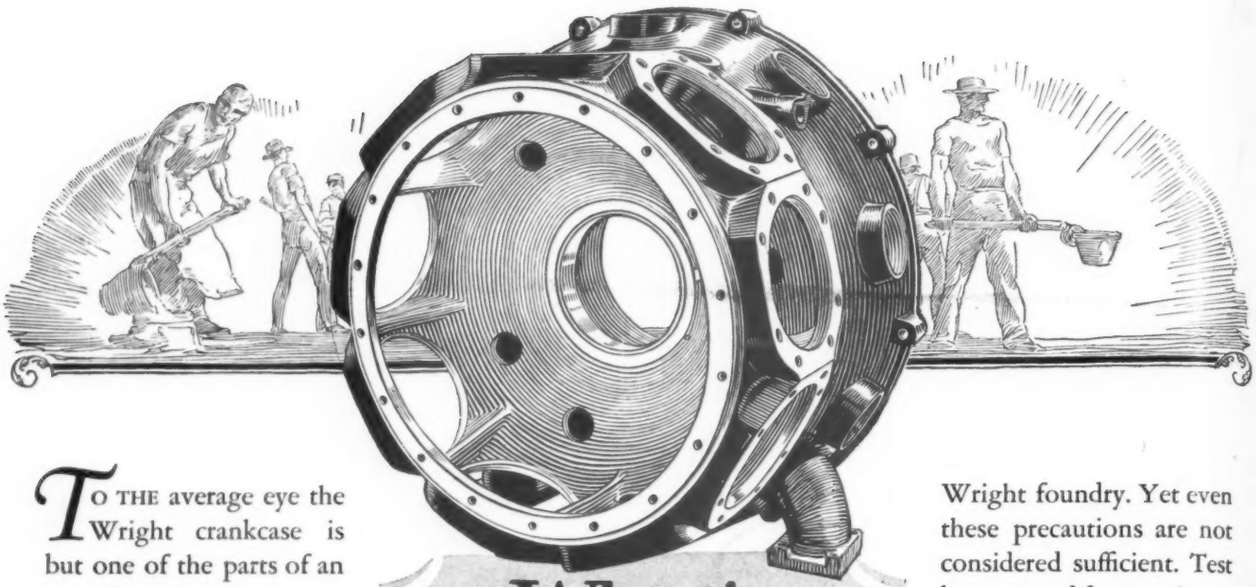

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TO THE average eye the Wright crankcase is but one of the parts of an aircraft engine, but in no part of any modern mechanism is sound design more apparent or skilful workmanship better exemplified.

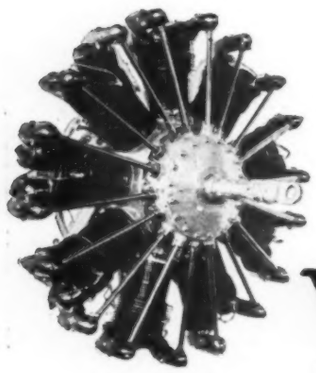
To the metallurgist, engineer, foundryman or machinist, it is remarkable that a casting of such size can be so tough and durable...yet so light...so strong and rigid...yet comprised of such thin sections.

It is not by chance that it is known as "the finest aluminum casting made". From the specification of the alloy to assembly of the finished part in the engine, the Wright crankcase is held to the most rigid of standards.

Only the best metals of the world are used; the mixing of the alloy itself is done with exacting care; remelting of scrap is unheard of in the Wright foundry. Yet even these precautions are not considered sufficient. Test bars, poured from each crucible of molten alloy must pass rigid chemical and physical tests or the entire heat of metal is rejected.

Nor does this vigilance relax when once the crankcase is cast. There must be no internal stresses in the metal, no porous areas, no unseen cracks or defects. Each unit is heat-treated to assure full strength of all sections, thick or thin; each is tested under water by air pressure that no porous passages may exist; each is etched in acid that no minute defects may pass unnoticed.

For more than a decade Wright has been building engines with just such care as this...to produce aircraft power plants that measure up to the highest standard of excellence... an unchanging policy which explains Wright engine performance.



*Wright "Cyclone" Aeronautical Engine*

*That's why More Pilots fly them!*

# WRIGHT

WRIGHT AERONAUTICAL CORPORATION

*Paterson, N. J., U. S. A.*

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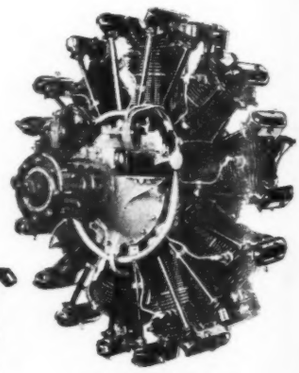

*Wright "Whirlwind" Aeronautical Engine*